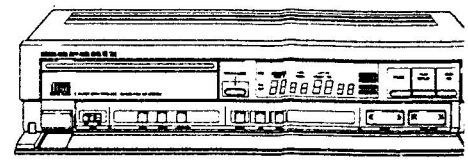
Service
Service
Service



42 556

Remote control is available under codenumber: 4822 218 20798

Service Manual

COMPAC
disc
DIGITAL AUDI

CONTENTS

1 Explanation of subdivision and table of contents per page
2 Controls and technical specifications
3 Servicing hints
4 Exploded view cabinet and parts lists of mechanical components
5 Measurements and adjustments
6 Block diagram, circuit diagrams, PCB data, parts lists of electrial components and wiring diagram
7 Circuit diagrams, PCB data
8 Exploded view tray mechanism
9 Wiring diagram
10 Partslist
11 List of symbols

MARANTZ DESIGN AND SERVICE

ing superior design and selected high grade
mponents, MARANTZ company has created the
mate in stereo sound.
ly **original MARANTZ parts** can insure that your
ARANTZ product will continue to perform to the
ecifications for which it is famous.

rts for your MARANTZ equipment are generally
ailable to our National Marantz Subsidiary or Agent.

RDERING PARTS:

rts can be ordered either by mail or by telex. In both
ses, correct part number has to be specified.
e following information must be supplied to eliminate
lays in processing your order:
Complete address
Complete part numbers and quanties required
Description of parts
Model number for which part is required
Way of shipment
Signature: any order form or telex must be signed
otherwise such part order will be considered as null
and void.

TECHNICAL ASSISTANCE

Should you require any other technical support, do not hesitate to contact the Technical Department of
MARANTZ INTERNATIONAL
Quality & Service Dept.
Vestdijk 9
5600 MD Eindhoven
The Netherlands
Phone: +31/40.75.88.91 or 75.88.78 or 75.89.01
Telefax: +31/40.75.82.99
Telex: 35000 PHTC NL routing IND NLMTFAT

RTS ORDERING

rts may be ordered at the following addresses:

STRIA
RNYPHON
rtriebsgesellschaft GmbH
enerbergstrasse 1
1101 Wien
stria
ex: 132.332

LGIUM
D DIVISION MARANTZ
ustrialaan 1
20 Groot-Bijgaarden
lgium
ex: 24466

ILE
ARANTZ
VISION OF PHILIPS S.A.
Santa Maria, 0760
silla 2587
ntiago
ex: 240.239

ENMARK
ARANTZ
VISION OF PHILIPS
ERVICE A/S
ags Boulevard 80
stbox 1919
K-2300 København S
enmark
lex: 31201

FINLAND
MARANTZ
DIVISION OF OY PHILIPS Ab
Kaivokatu 8
00100 Helsinki
Finland
Telex: 124811

FRANCE
MARANTZ FRANCE
4 Rue Bernard Palissy
92600 Asnieres
France
Telex: 611651

GERMANY
MARANTZ GERMANY GmbH
Max-Planck-Strasse 22
6072 Dreieich 1
Germany
Telex: 529821

THE NETHERLANDS
Elpro Marantz
Wint Hontlaan 28
3526 KV Utrecht
The Netherlands
Telex: 4748

NORWAY
MARANTZ
DIVISION OF PHILIPS A/S
Sandstuveien 40
0680 Oslo 6
Norway
Telex: 72640

GREAT BRITAIN
MARANTZ AUDIO U.K. Ltd
Unit 15/16
Saxon Way Industrial Estate
Moor Lane
Harmondsworth UB7 OLW
Great Britain
Telex: 935196

GREECE
SHERTON ELECTRONICS S.A.
P.O.Box 21025
Hippocratus Street 188
Athens 11471
Greece
Telex: 216.795

JAPAN
MARANTZ JAPAN, Inc.
35-1, 7-chome, Sagamiono
Sagamihara-shi, Kanagawa
Japan

KUWAIT
AL ALAMIAH ELECTRONICS
Ussama Building
Fahd al Saleem Street
P.O.Box 23781
Safat-Kuwait
Telex: 22694

ITALY
MARANTZ ITALIANA S.P.A.
Via Chiese, 74
20126 Milano
Italy

SAUDI ARABIA
AL ALAMIAH ELECTRONICS
P.O.Box 5954
University Street
Riyadh 11432
Saudi Arabia
Telex: 401530

SOUTH AFRICA
MARANTZ
DIVISION OF PHILIPS S.A.
Main Road Martindale
P.O. Box. 58088
Newville 21114
South Africa

SPAIN
PHONO S.A.
Ignacio Iglesias 10
Badalona (Barcelona)
Spain
Telex: 59355

SWEDEN
MARANTZ
DIVISION OF PHILIPS
Försäljning AB
Tegeluddsvägen 1
S-115 84 Stockholm
Sweden
Telex: 14060

SWITZERLAND
DYNAVOX ELECTRONICS
Route de Villars 105
1701 Fribourg
Switzerland
Telex: 942377

TURKEY
DOGRUOL Ltd.
I.M.C.
6 Blok N°6310
Unkapani
Istanbul
Turkey
Telex: 22085

MALTA
CACHIA & GALEA
Republic Street, 68D
Valetta
Telex: 1682

PORTUGAL
MARANTZ
Divisao philips S.A. service
Outurela-carnaxide
2795 LinDA-A-VELHA
Telex: 43906

ll of the above locations are fully equipped to take care of your total service needs. Because various countries have iffering configuration requirements, it is necessary that you contact the service facility in your particular country. In e event that there is no service location listed for your country, please, contact the nearest facility for the necessary ssistance.

In case of difficulties, do not hesitate to contact the Technical Department at abovementioned address.

EXPLANATION OF THE LAYOUT OF THE DOCUMENTATION

The documentation consists of chapters.
The number of the chapter is indicated by the first digit of the page number.
The second digit of the page number is the sequence numbering.

If modifications or supplements require new supplementary or replacement pages, the page number is extended with a third part:

A digit behind the page number indicates that it concerns a supplementary page.
A replacement page is indicated by a letter behind the page number.
Example

3-6	is page 6 of chapter 3
3-6-1	is a supplementary page behind page 3-6
3-6-a	is the replacement page of page 3-6 (so page 3-6 can be removed from the documentation).

TABLE OF CONTENTS PER PAGE

Chapter	Page	Contents
1	1-1	Explanation of the subdivision of the documentation
2	2-1	Controls
2	2-2	Controls, technical specification
3	3-1	Servicing hints
3	3-2	Disassembly of the cabinet and loading
3	3-3	Service disc hold-down, extension cable voltage adaptor
4	4-1	Exploded view cabinet
5	5-1	Faultfinding tree Detailed measuring method
5	5-2	Detailed measuring method
5	5-3	Detailed measuring method
5	5-4	Detailed measuring method
5	5-5	Detailed measuring method
6	6-1	Block diagram
7	7-1	Servo circuit
7	7-2	Drawing of main panel
7	7-3	Drawing of main panel
7	7-4	Decoding 1 circuit
7	7-5	Decoding 2 circuit
7	7-6	Control and display circuit Control and display panel
7	7-7	Power supply circuit
8	8-1	Exploded view tray mechanism (loading)
9	9-1	Wiring diagram
10	10-1	Electrical partslist
10	10-2	List of chip components
11	11-1	List of symbols
11	11-2	List of symbols

OPERATION

1

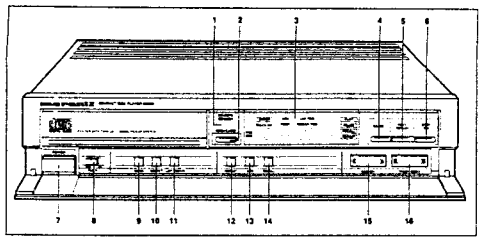


Fig. 1

2

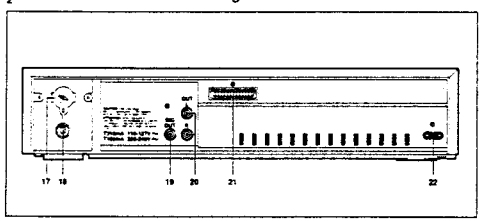


Fig. 2

44 230 A11

SUMMARY OF CONTROLS AND CONNECTIONS

Front of player (Fig. 1)

1 **REMOTE SENSOR**
Receives the signals from the remote control handset.

2 **OPEN/CLOSE**
For opening and closing the disc tray.

3 **DISPLAY**
Informs you about the functioning of the player.
Displays details from the disc contents list.

4 **PAUSE**
For interrupting play.

5 **PLAY/REPLAY**
For starting play (**PLAY**)
For returning to the beginning of a track (**REPLAY**)

6 **STOP/CM**
For stopping play (**STOP**)
For erasing a program (**CM** = Clear Memory).

7 **POWER**
For switching the player on and off.

CONTROLS UNDER FLAP

8 **TIMER ON/OFF switch**
For starting play automatically when using a timer.

9 **MEMO**
For storing details when compiling a program.
For erasing a program item.

10 **SELECT**
For selecting the **SELECT** position. Using
K< **TRACK/INDEX** >I or the **1-0** digit buttons on the remote control handset data can be entered when:
Selecting another track or index number during play.
Selecting a track or index number or time position to start play with.
Selecting track or index numbers or time positions during programming.

11 **LAP/REMAIN**
For selecting the time information you want to see:
LAP TIME: The elapsed playing time of a track (**LAP** = elapsed).
REMAIN TIME: The remaining playing time of the entire disc or of a program.

12 **REPEAT**
For repeating a disc or program.

13 **AMS**
For automatically playing the beginning of each track (**AMS** = Automatic Music Scan).

14 **RECALL**
For reviewing and checking a program.
The **REVIEW** button on the remote control handset has the same function.

15 **≪SEARCH≫**
For fast search for a particular passage
(≪ backwards; ≫ forwards).

16 **K≪TRACK/INDEX≫I**
For selecting another track or index number during play.
For selecting a track or index number or time position to start play with.
For selecting track and index numbers and time positions during programming.
(K≪from high to low; ≫I from low to high).

REAR OF PLAYER (Fig. 2)

- **All connecitons to the rear panel should be made with the power to the entire system switched off.**
- To avoid cross-connection of channels, connect one plug at a time.

17 **VOLTAGE SELECTOR**

18 **MAINS FUSE HOLDER**

19 **DIG OUT**
For digital signal processing or future applications such as CD-I.
This output supplies a digital signal and can therefore only be connected to an input which is suitable for this signal. Use here a lead with one cinch plug on either end.
Important: Never connect this socket to a non-digital input of an amplifier, such as AUX, CD, TAPE, PHONO, etc. This can damage the amplifier and the loudspeakers.

20 **OUT L/R**
Insert the two plugs of the connecting lead provided into these sockets and connect the other end of the cable to the CD or AUX sockets of the pre-amplifier or amplifier to be used. Be careful **not** to use the PHONO sockets! Note that **L** or white corresponds to the left channel and **R** or red to the right channel.

21 **MULTI CONNECTOR**
For interconnecting equipment when the player is used in a Marantz Midi System. See also 'Multi Connector' on.

22 **MAINS socket**

TECHNICAL SPECIFICATION

● System	: Compact Disc Digital Audio system
● Mainsvoltages	: 110 V, 127 V, 220 V, 240 V ± 10% (to be changed by transformer connections)
● Mains frequencies	: 50,60 Hz(no adaption required)
● Power consumption	: ≤20 W
● Frequency range	: 20 Hz + 20 kHz ±0,1 dB
● Output voltage	: max. 2 V_{rms}/≥10 kOhms
● Output impedance	: 200 Ohms
● S/N ratio	: ≥96 dB
● Channel separation	: ≥90 dB
● Channel difference	: ≤0,2 dB
● Total harmonic distortion	: ≤−90 dB
● Intermodulation distortion	: ≤−90 dB
● De-emphasis	: 0 or 15/50 µs (switched by the subcode on the disc)
● Dimensions WxDxM	: 360 x 300 x 81 mm (tray closed)
● Weight	: approx 3 kg

THE INFORMATION ON THE DISPLAY

Each Compact Disc has, along with the music, a list of contents detailing the numbers of the tracks, the playing time of each track and the total playing time of the disc. The player always scans this first and store it in its memory in order, for instance, to provide information via the display.

PRG
Lights up when a program is stored in the player memory
Lights when a program is being played.

DISC
Flashes when the table of contents of a disc is being traced.

ERROR Lights up if you make a mistake when operating the player.

TRACK NO.
Indicates the track number being played.

AMS
Lights up during scanning when the beginning of each track is played

INDEX
The numbers only change if the parts of a track have index numbers.

LAP TIME
Lights up when the elapsed playing time of a track is shown.

REMAIN TIME
Lights up when the remaining playing time of the entire disc or a program is shown.

PLAY
Lights during play.

PAUSE
Lights up when play is interrupted.

RECALL
Lights up when you review a program.

REPEAT
Lights up when a disc or program is repeated.

SERVICING HINTS

ESD

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD).
Careless handling during repair can drastically reduce life expectancy.
When repairing, make sure that you are connected via a wrist wrap with resistance to the same potential as the chassis of the set. Keep components and aids also at the same potential.

In the set chip components have been applied.
For disassembly and assembly of chip components see the figure below.

The disc should always rest properly on the turntable.
To achieve this a disc hold–down has been mounted in a bracket of the tray mechanism.
If the tray mechanism has to be disassembled for servicing, a separate disc hold-down should be used. For a service disc hold–down see page 3-3

When the tray mechanism and CDM-unit has been disassembled the player can be prepared for measurements by bridging the "tray detection" switch SK2 on the main panel.

SERVICE AIDS

Audio test disc	4822 397 30085
Disc without errors + disc with DO errors, black spots and fingerprints	4822 397 30096
Disc(65 min 1kHz) without pause	4822 397 30155
Torx screwdrivers	
Set (straight)	4822 395 50145
Set (square)	4822 395 50132
13th order filter	4822 395 30204

REPLACEMENT OF TRANSFORMER FUSE

- Remove top cover.
- Remove the transformer
- Now the transformer fuse is accessible.

WORKING WITH THE FAULTFINDING TREE

Follow the path of the faultfinding tree, beginning at the top left. Perform the actions you come across in the various blocks.
Look at the various side branches to find out if the information you see there applies to your problem. If, for instance, you find the indication :=-=: , this means that no picture appears on the display. If you establish this fault, follow the branch and perform the recommended actions. Check the components mentioned. In a number of branches further reference is made to measurements you could carry out. These measurements are explained in several tables further on in this manual.

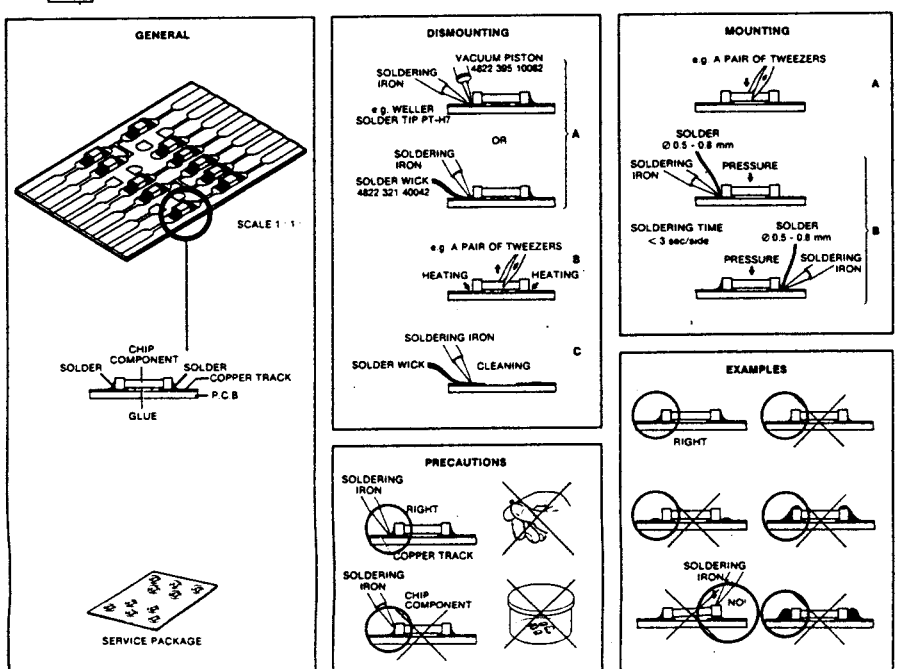
Explanation of the symbols used

= oscilloscope (ri ≥ 10 MΩ)

= meter (voltmeter with ri ≥ 10 MΩ)

= carry out alignment/adjustment

= test point



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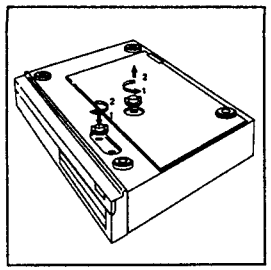
DISASSEMBLY OF THE CABINET AND LOADING

3



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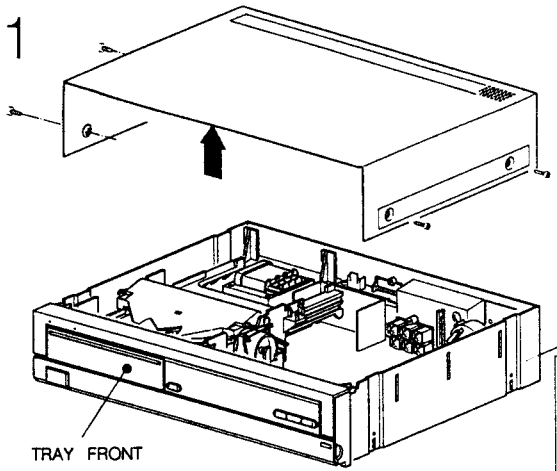
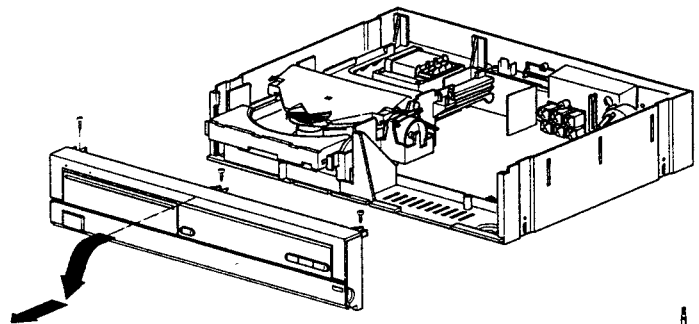


TORX 10 4x

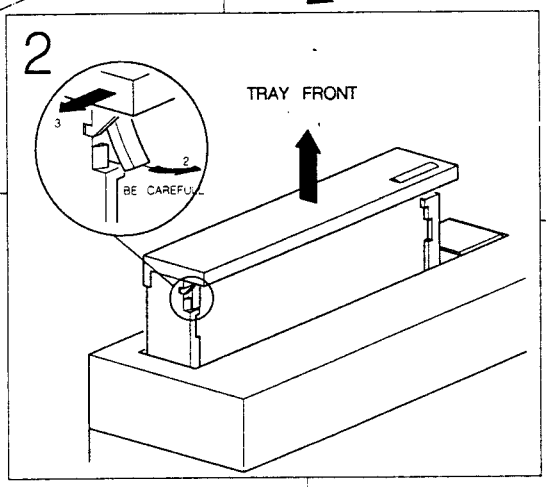
GLASS FUSE

3



TORX 10 3x

2



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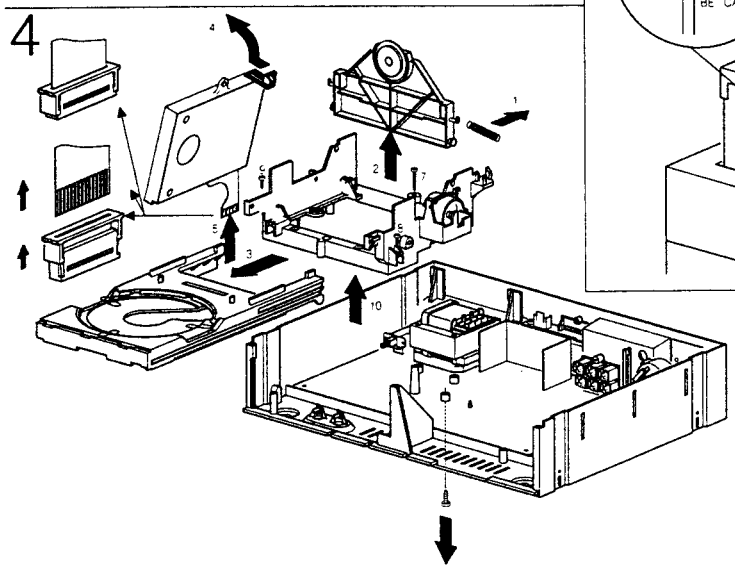
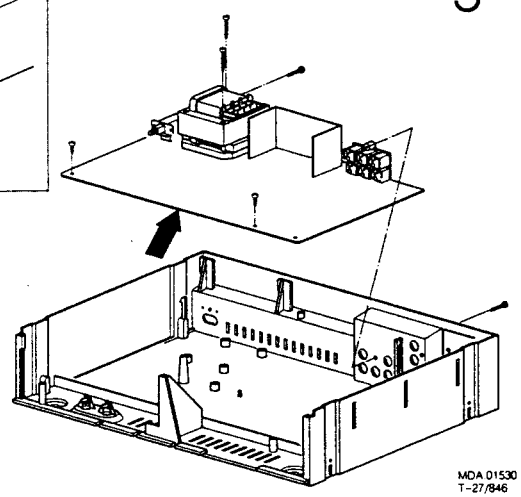


TORX 10 4x

6x TORX 10

5

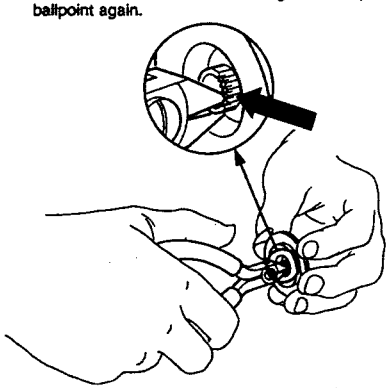


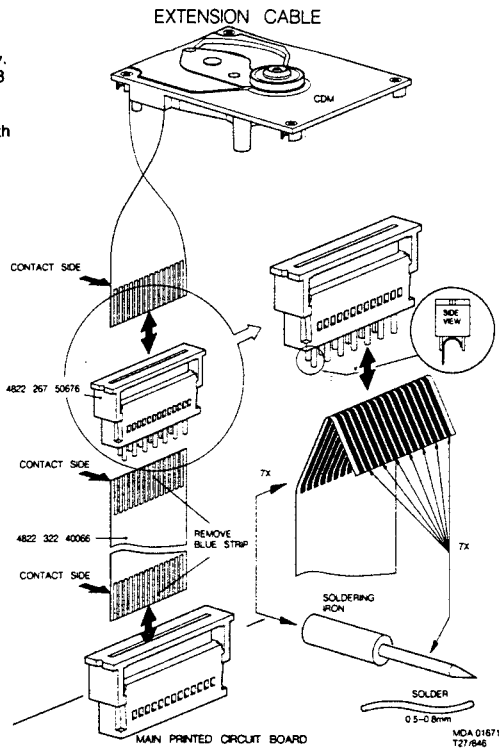
MDA 01530
T-27/846

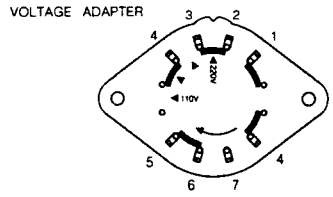
CS 19 338

Service disc hold-down

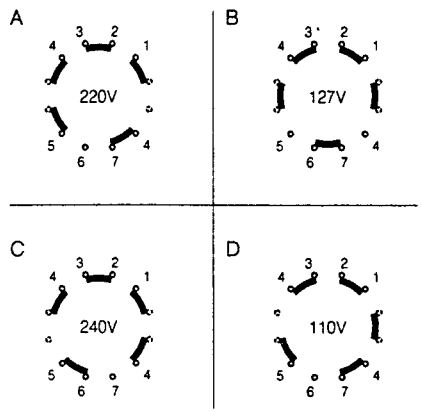
Compose a service Disc hold-down in the following way.
- Cut in the most inner ring of a disc holddown pos 118 (4822 462 50383) with small and sharp nippers See fig. below.
- Enlarge the diameter of the innermost ring slightly with the hind part of a pencil or ballpoint, so that it jams onto the turntable with sufficient force.
- If the jamming force decreases after certaintime of use, the diameter has to be enlarged with a pencil or ballpoint again.

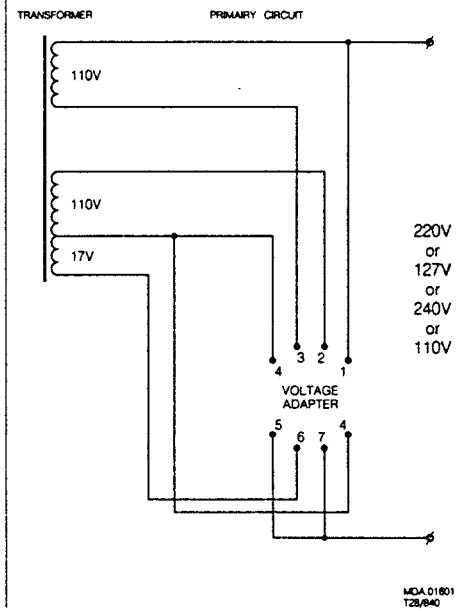






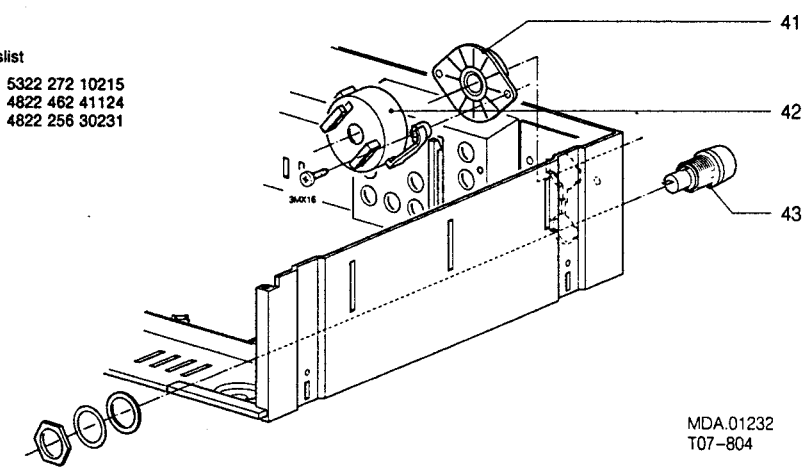
CONNECTIONS INSIDE VOLTAGE ADAPTER

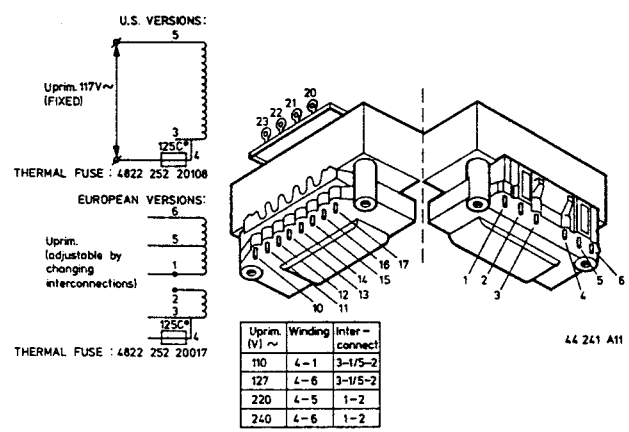




Partslist

41	5322 272 10215	
42	4822 462 41124	
43	4822 256 30231	

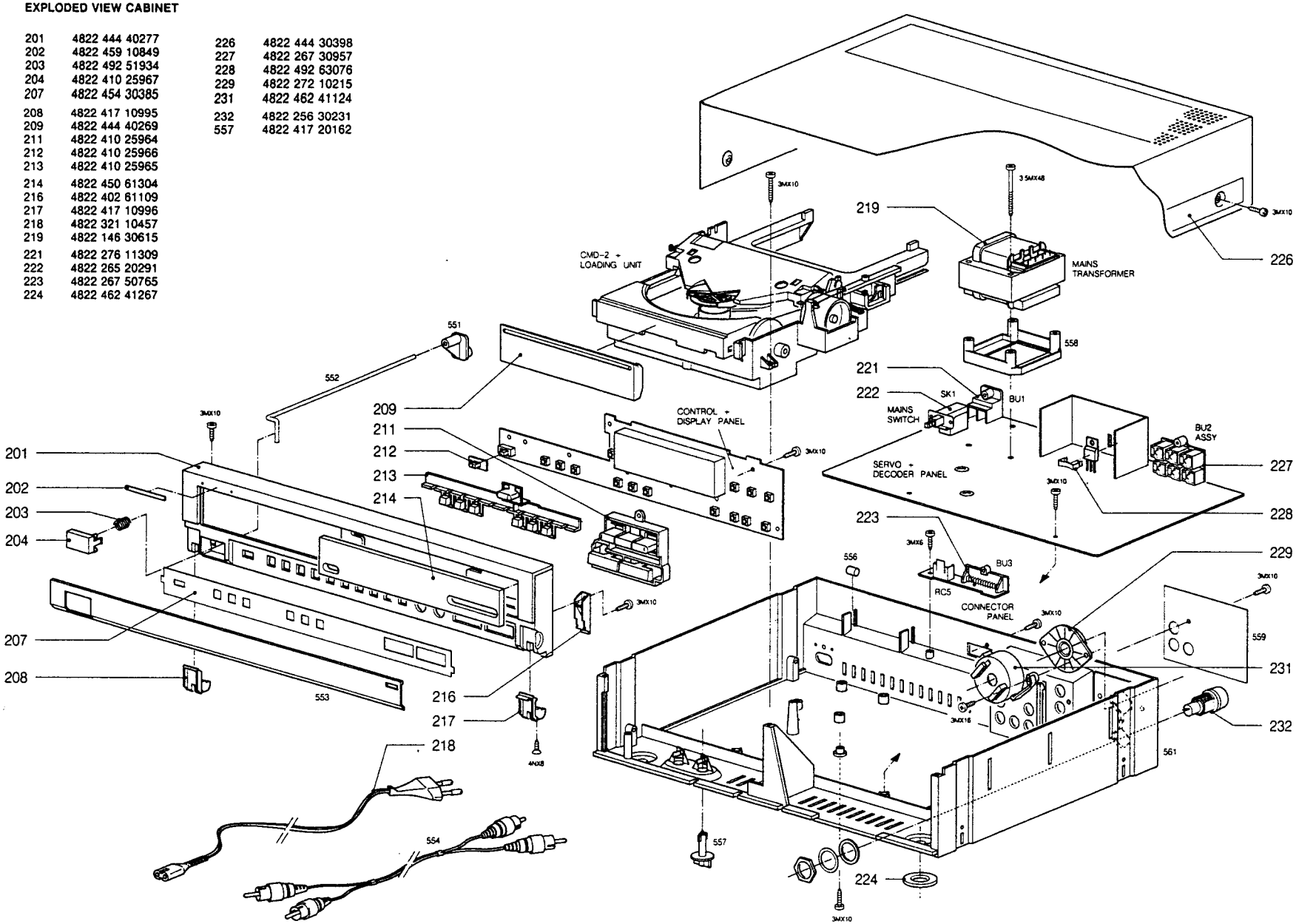




Uprim. (V) ~	Winding	Inter-connect
110	4–1	3–1/5–2
127	4–6	3–1/5–2
220	4–5	1–2
240	4–6	1–2

EXPLODED VIEW CABINET

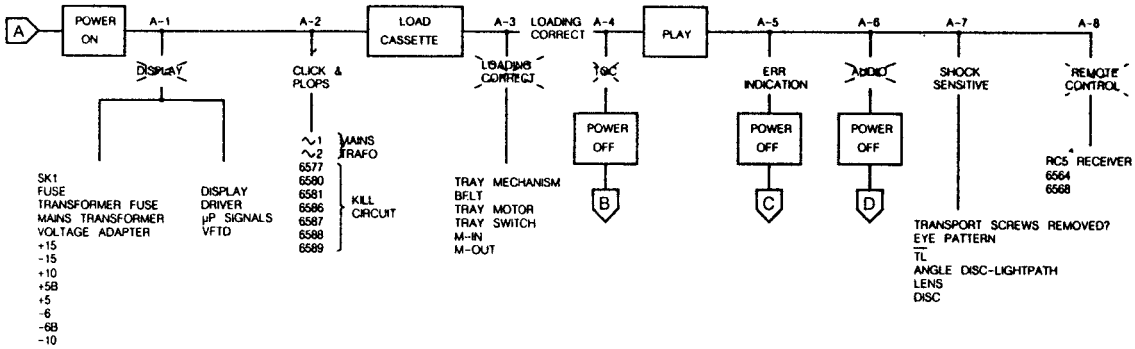
201	4822 444 40277	226	4822 444 30398
202	4822 459 10849	227	4822 267 30957
203	4822 492 51934	228	4822 492 63076
204	4822 410 25967	229	4822 272 10215
207	4822 454 30385	231	4822 462 41124
208	4822 417 10995	232	4822 256 30231
209	4822 444 40269	557	4822 417 20162
211	4822 410 25964		
212	4822 410 25966		
213	4822 410 25965		
214	4822 450 61304		
216	4822 402 61109		
217	4822 417 10996		
218	4822 321 10457		
219	4822 146 30615		
221	4822 276 11309		
222	4822 265 20291		
223	4822 267 50765		
224	4822 462 41267		

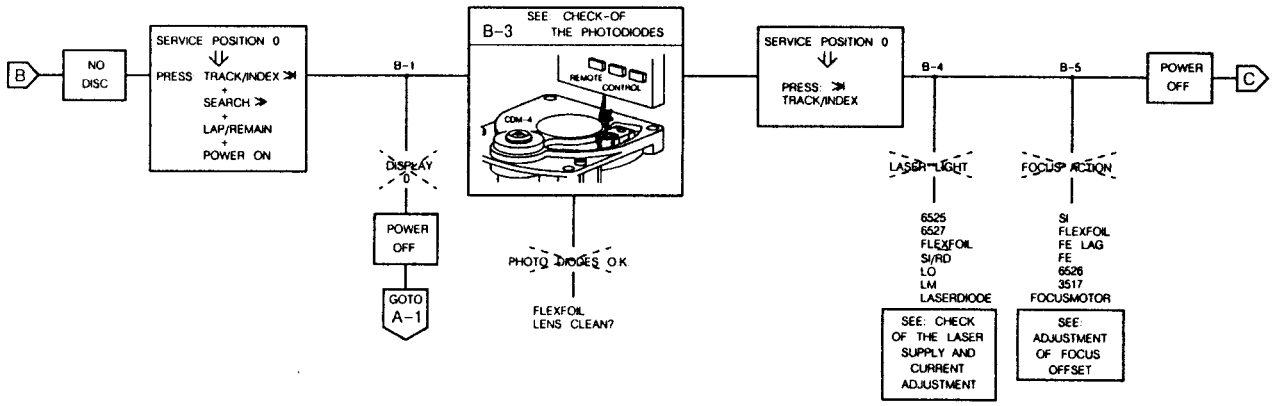


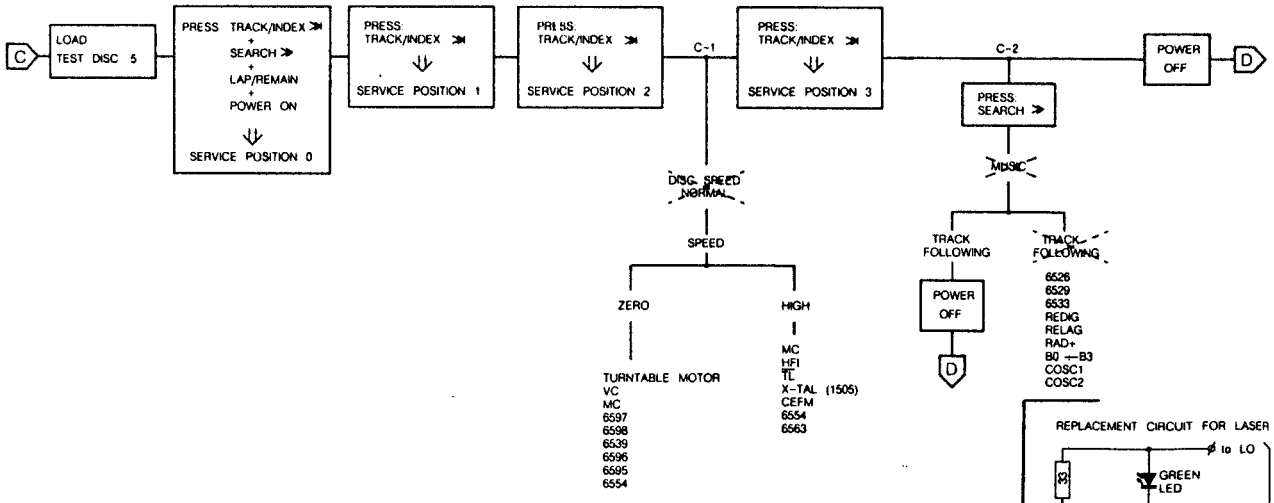
TROUBLE SHOOTING

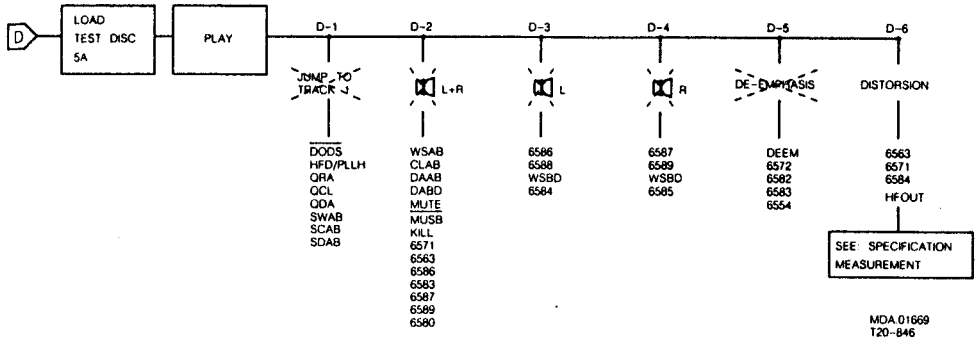
TROUBLE SHOOTING (FAULT FINDING TREE)

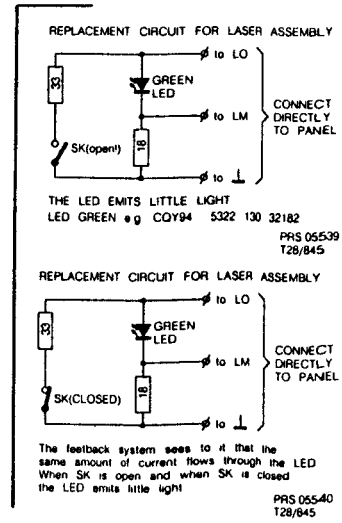
START-UP PROCEDURE











A-1 µP - SIGNALS

Signal	Mode	◇			Remarks
Reset	Power on	14		Pulse "high"	
X-TAL	Stand-by	13		6 MHz	
TRAY IN	Open/close	83		"high"	"high" when tray is closing
TRAY OUT	Open/close	83A		"low"	"low" when tray is opening
$\overline{ATSB}$	DISC, SEARCH	89		"low"	
I^2C	Power on, play	31		Activity	"high" when starting up

T-22275A

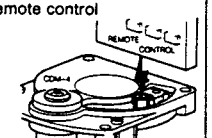
B-2 B0, B1, B2, B3 SIGNALS

Signal	Mode	◇			Remarks
B0	Service position 0 or 1; search ≫	36		"low"	
	Service position 0 or 1; search ≪	36		"low"	
B1	Service position 0 or 1; search ≫	34		"low"	
	Service position 0 or 1; search ≪	34		"high"	
B2	Service position 0 or 1; search ≫	33		"low"	
	Service position 0 or 1; search ≪	33		"high"	
B3	Service position 0 or 1; search ≫	32		"high"	
	Service position 0 or 1; search ≪	32		"high"	

T-22275B

B-3 CHECK OF THE PHOTODIODES

Step	Signal	Mode	◇	∅			Remarks
1	-	power on	④ ⑥ ⑦ ⑧	-	-	See drawing 38314A12	Signal depends on Distance lens ↔ IR LED of remote control



T-22275C

B-4 CHECK OF LASER SUPPLY

The laser, the lasersupply plus the monitor diode form a feedback system.
A defect in the lasersupply may result in the destruction of the laser. If, in that case, the laser is replaced, (= complete O.C.M.-unit) the new laser will also become defective. However, it is impossible to check and repair a feedback system if a link is missing. For this reason the laser supply can be checked with the replacement circuit for laser assembly.

Step	Signal	Mode	◇	∅			Remarks
1	LO	serv. pos. 2 SK	⑨ Ⓥ	-	1.8<V <2.3	-	PRS05539
	LM		① Ⓥ	-	170<mV <220	-	
2	LO	serv. pos. 2 SK	⑨ Ⓥ	-	1.8<V <2.3	-	PRS05540
	LM		① Ⓥ	-	170<mV <220	-	
3	LO	Power on	⑨ Ⓥ	-	0V ± 0.2V	-	No light

T-22275D

B-4 LASER CURRENT ADJUSTMENT

Step	Signal	Mode	◇	∅			Remarks
1	-	Power off	① Ω	R3520	1kΩ	-	Pre-adjustment Ohmic value
2	Eye-pattern HF	Power on Test disc 5 play	pin 25 decoder 1 (SAA7210)	-	-	See drawing 37017B8	IF no signal see "start up procedure"
3	laser current ≙ voltage across R3508	Test disc 5 play track 1	① Ⓥ ②	R3528	50 mV DC	-	-

T-22275E

B-5 ADJUSTMENT OF FOCUS-OFFSET

Step	Signal	Mode	◇	∅			Remarks
1	-	Power on	-	R3517	-	-	adjust for optical mid-position of the focus motor
2	FE LAG	Play Test disc 5 Track 1	27	R3517	400mV ± 40 mV DC	-	fine adjustment

T-22275F

B-5 FOCUS ACTION

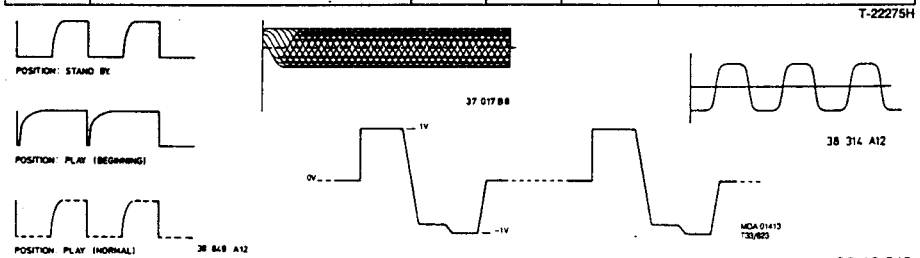
Signal	Mode	◇			Remarks
SI	Service position 1 when repeating start up procedure	21			See drawing MDA.01403
FE	Service position 1, no disc	26			See drawing MDA.01413
FE-LAG	Test disc 5A, play	27		pulse "high"	See adjustment of focus-offset
RD	Service position 1, no disc	24		pulse "high"	"high" when focus motor is not moving

T-22275G

C-1 HIGH SPEED DISC ROTATION

Signal	Mode	◇			Remarks
$\overline{MC}$	Test disc 5, play or service position 2	16		"high"	Pulses "high" during starting up
HFI	Test disc 5, play or service position 2	65			See drawing: 37017B8
X-tal	Test disc 5A, play or service position 2	70		11.28 MHz	
CEFM	Test disc 5A, play or service position 2	68		4.32 MHz	
MC	Test disc 5, play or service position 2	12			See drawing: 38849A12

T-22275H



CS 19 342

C-2 TRACK FOLLOWING

Signal	Mode	◇			Remarks
RE dig	Test disc 5, play or service position 3	37		pulses "high"	When the disc is slowly braked by hand
RE lag	Test disc 5, play or service position 3	41		400 Hz ⟷ 500 Hz	Pulses during search
RAD+	Test disc 5A, service position 1 ≪≫	40			Arm inside: 1V Arm outside: −1V
C osc1	Test disc 5, play or service position 3	30		650 Hz	
C osc2	Test disc 5, play or service position 3	31		650 Hz	

T-22275I

D1 JUMP TO TRACK 1

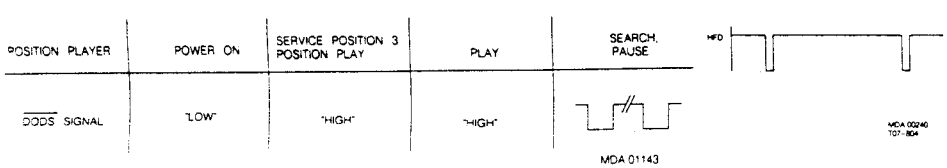
Signal	Mode	◇			Remarks
$\overline{DODS}$	Test disc 5A search ≫ or search ≪	19			See drawing MDA.01143
HFD	Test disc 5A, track 15, play	66		pulses "low"	See drawing MDA.00240 also pulses when the disc is slowly braked by hand
QRA	Test disc 5A, play	75			} See drawing MDA.00453
QDA	Test disc 5A, play	77			
QCL	Test disc 5A, play	76			
SWAB/SSM	Test disc 5A, play	78			See drawing MDA.00239
SCAB	Test disc 5A, play	79			See drawing MDA.00239
SDAB	Test disc 5A, play	80			See drawing MDA.00239

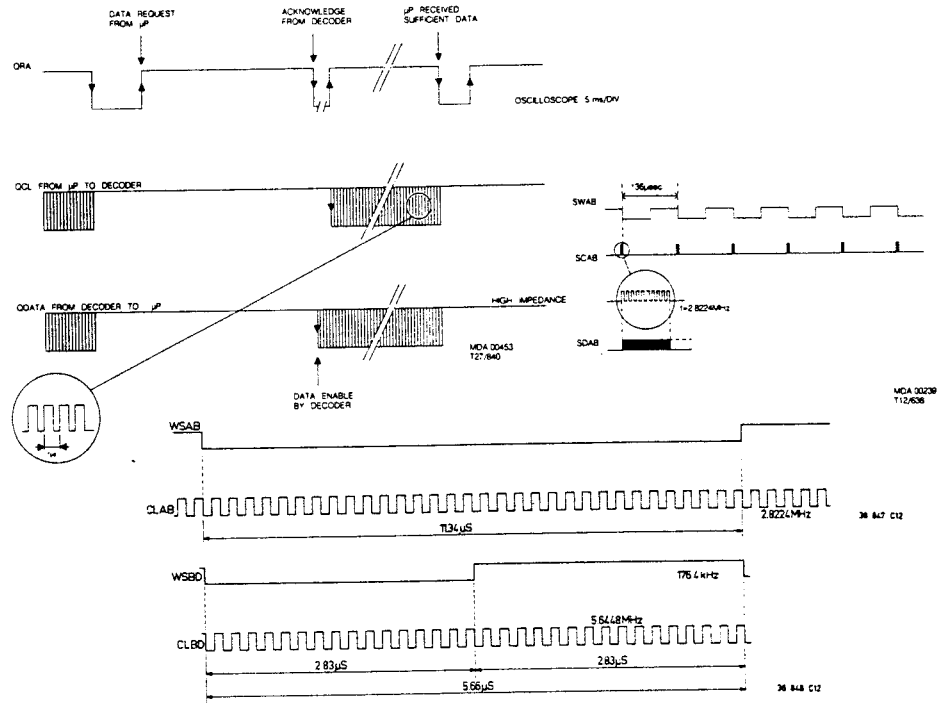
T-22275J

D-2 NO AUDIO OUTPUT LEFT+RIGHT

Signal	Mode	◇			Remarks
CEFM	Disc, play	71			See drawing 38847C12
WSAB	Disc, play	72			See drawing 38847C12
DAAB	Disc, play	73		activity	
EFAB	Testdisc 5A	74		pulses "high"	When the disc is slowly braked by hand
CLBD	Disc, play	78			See drawing 38848C12
DABD	Disc, play	86		activitiy	
WSBD	Disc, play	85			See drawing 38848C12
$\overline{MUSB}$	Disc, play	90		"high"	Pause, next, prev, stop: "low"

T-22275K





Initiation of the servicing programme of the µP

- **Servicing position "0"**

Simultaneously depress the SEARCH», TRACK/INDEX ▷▷| and LAP/REMAIN keys. Keep these three keys depressed while the mains voltage is switched on. This is the STAND-BY mode, "0" appears on the display.

In this position it is possible to move the arm by means of the SEARCH »and SEARCH« keys with a minimum of torque to the inside and outside respectively.
This makes it possible to control the free motion of the arm across the length of the disc.

- **Servicing position "1"**

From servicing position "0" the player can be brought in servicing position 1" by depressing the TRACK/INDEX ▷▷| key.

In this state the laser emits light and the objective starts to focus. When the focal point has been reached, "1" appears on the display.

When no disc has been inserted the objective goes 16x to and fro. Then the player reassumes servicing position "0".
In service mode "1" the arm can be moved across the disc by means of the SEARCH» and SEARCH« keys.

- **Servicing position "2"**

To be reached by depressing the TRACK/INDEX ▷▷| key after servicing position "1" has been reached.

The turntable motor starts to run

On the display appears "2".

In preparation of the transition to servicing position "3" the arm is sent to the centre of the disc.

- **Servicing position "3"**

To be reached by depressing the TRACK/INDEX ▷▷| key after servicing position "2" has been reached.

The radial control is switched on. $\overline{MUSB}$ is high so that the music information **is released**.

On the display appears "3".

(Dependent on the length of the lead-in track music will be reproduced after approx. 1 min.).

In this state it is possible to move the arm by means of the SEARCH » key to the outside and to the inside, by means of the SEARCH «.

Now the motion is controlled by the µP and the arm moves by steps of 64 tracks as long as the key is depressed.

If servicing position 3 is disturbed (e.g. braking or removing the disc) the player reassumes servicing position "0".

The servicing programme can be left by switching the mains switch (POWER ON/OFF) off and on (Hardware reset).

D-5 DEEM CIRCUIT

Signal	Mode	◇			Remarks
DEEM	Test disc 5A: track 14 PLAY track 15 PLAY	84		"low" "high"	See testpoint 92 and 91 on DEEM circuit
Testpoint 92	Test disc 5A track 14	92		LF signal	
Testpoint 92	Test disc 5A track 15	92		No signal	
Testpoint 91	Test disc 5A track 14	91		LF signal	
Testpoint 91	Test disc 5A track 15	91		No signal	

T-22275L

D-6 SPECIFICATIONS MEASUREMENT

Signal	Mode	◇			Remarks
BU2-L	Test disc 3, play, total harmonic distorsion	filter output	See technial data		See drawing 30459A12
BU2-R	Test disc 3, play, total harmonic distorsion	filter output	See technial data		See drawing 30459A12
BU2-L	Test disc 3, play signal-to-noise ratio	filter output	See technial data		See drawing 30459A12
BU2-R	Test disc 3, play signal-to-noise ratio	filter output	See technial data		See drawing 30459A12

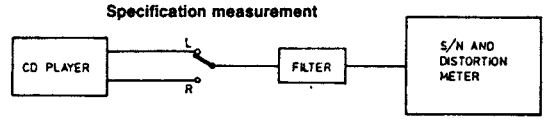
T-22275M

D-9 DOBM DIGITAL OUTPUT

Signal	Mode	◇			Remarks
DOBM	Test disc 5A	88			See drawing MDA.00238

T-22275N

Specification measurement



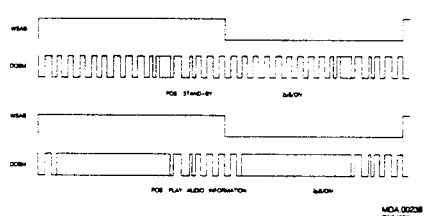
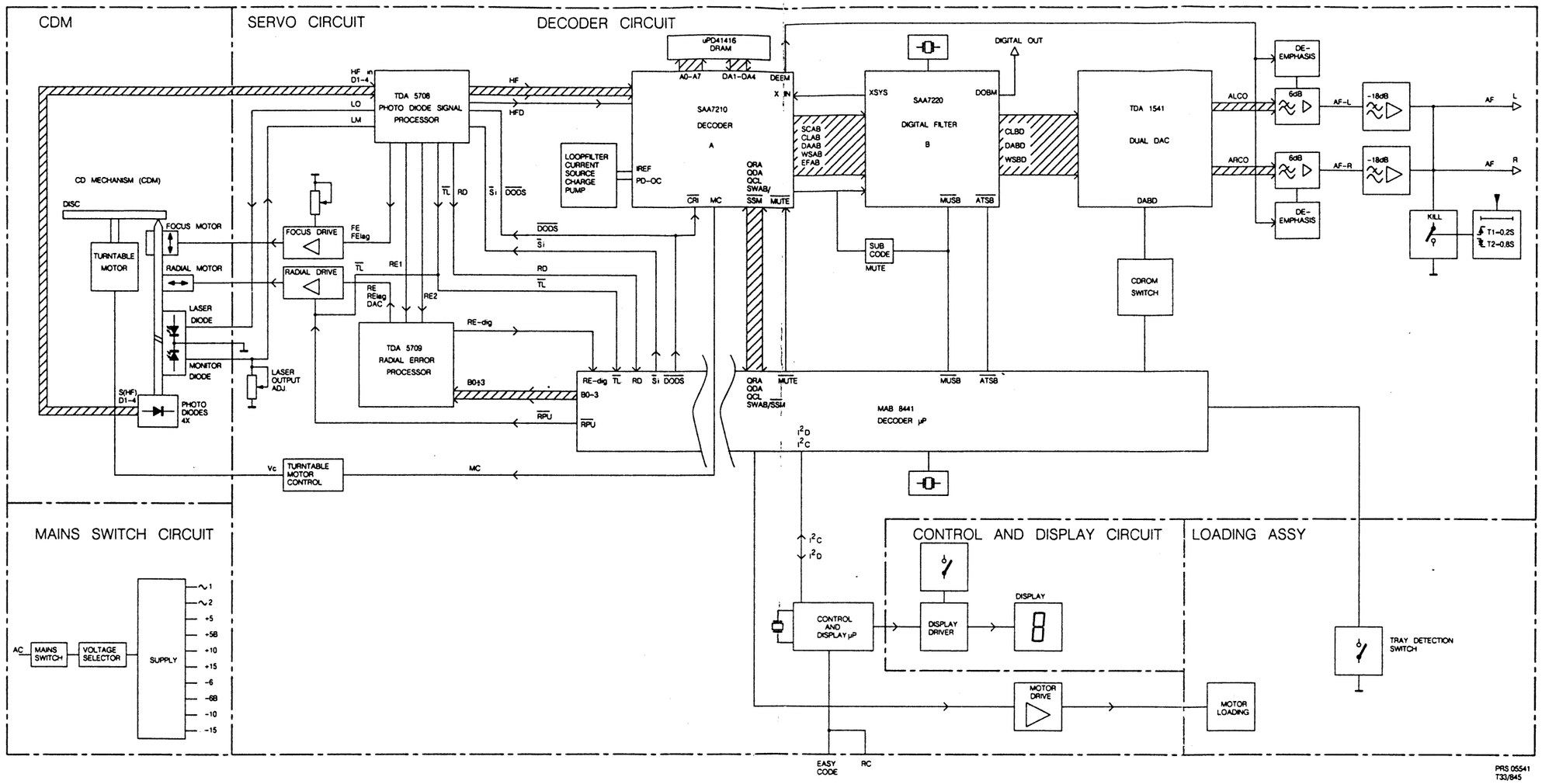


Fig. 4

To measure the specification use can be made of audio test disc 4822 397 30085.
Use 13th order filter 4822 395 30204 to measure (see Fig.4):
- Total harmonic distortion (THD)
- Intermodulation distortion
- Signal-to-noise ratio (S/N)

30 459 A12

BLOCK DIAGRAM



AGC – Automatic Gain Control
B0-B3 – Control bits for radial circuit
BEQ – Equalizer reference current input
BGC – DC and LF gain control reference input
Cosc1 – Capacitor wobble oscillator
Cosc2 – Capacitor wobble oscillator
DEC – Decoupling input of inkruat bypass
DET – HF detector voltage input
DIV4 – Divide by 4 input
$\overline{DODS}$ – Drop out detector suppression
D1÷4 – Photodiode currents
FE – Focus error signal
FE lag – Focus error signal for LAG network
HF – HF output for DEMOD
HFD – HF detector output for DEMOD
HF-in – HF current input to HF amplifier
HF-out – HF amplifier and equalizer voltage output
LM – Laser monitor diode input
LO – Laser amplifier current output
MC – Motor control signal
offset IN – Offset control input
offset OUT – Offset control output
PLLH – PLL on hold output
RADout – output of RE2-RE1 input
RE – Radial error signal (Amplified RE_2-RE_1 currents)

Rosc – Resistor wobble oscillator
Rwob – Wobble generator input
RE1 – Radial error signal 1 (summation of amplified currents D_3 and D_4
RE2 – Radial error signal 2 (summation of amplified currents D_1 and D_2
RE dig – Radial error digital
RE lag – Radial error signal for LAG network
Sc – Starting up capacitor input
Si/$\overline{RD}$ – On/off control for laser supply and focus circuit. Ready signal, Starting up procedure succesful.
$\overline{TL}$ – Track loss output signal
TTM– – Control voltage for turntable motor
TTM+ – Control voltage for turntable motor
Vext– – Supply connection
Vext+ – Supply connection
TCMP – Turntable control motor pulse

$\overline{ATSB}$ – Attenuation of Audio level in Search position (Cueing)
CD ROM Switch – Digital Data information on disc signal
CEFM – Clock Eight-to-Fourteen Modulator
CLAB – Clock signal Decoder-A to Filter-B
CLBD – Clock signal Filter-B to DAC
$\overline{CREF}$ – Reference Current
$\overline{CRI}$ – Counter Reset Inhibit
DAAB – Data signal Decoder-A to Filter-B
$\overline{DABD}$ – Data signal Filter-B to DAC
$\overline{DEEM}$ – Deemphasis
DOBM – Digital out signal
$\overline{EFAB}$ – Error flag Decoder-A to Filter-B
$\overline{MUTE}$ – Mute signal

$\overline{MUSB}$ – Soft Mute signal
PD/OC – Phase detector - oscillator control
QCL – Q-channel Clock signal
QDA – Q-channel Data signal
QRA – Q-channel Request Aknowledge
SCAB – Subcode clock Decoder-A to Filter-B
SDAB – Subcode data Decoder-A to Filter-B
SWAB/$\overline{SSM}$ – Subcode Word/Start-stop motor signal
WSAB – Word select Decoder-A to Filter-B
WSBD – Word Select Filter-B to DAC
XIN – Oscillator signal in Decoder-A
XSYS – Oscillator signal out Filter-B

SERVO

1001 J 1 | 1002 J 1 | 1003 J 1 | 1502 A10 | 2526 F 3 | 2527 F 3 | 2528 E 5 | 2529 E 4 | 2530 E 6 | 2531 E 5 | 2532 F 6 | 2533 F 8 | 2534 F 9 | 2535 F10 | 2536 H10 | 2537 J12 | 2538 J13 | 2539 E 7 | 2540 L13 | 2541 L13 | 2542 K12 | 2543 K13 | 2544 J11 | 2545 L 9 | 2546 J 4 | 2547 I10 | 2548 J 3 | 2549 K13 | 2550 K13 | 2551 H11 | 2555 C17 | 2556 C14 | 2557 F21 | 2558 E18 | 2559 G18 | 2560 F20 | 2561 I14 | 2562 I14 | 2563 I15 | 2564 I15 | 2566 L17 | 2568 M16 | 2569 N15 | 2571 M14 | 2581 A 9 | 2582 A 9 | 2583 A 8 | 2584 A10 | 3508 F 3 | 3509 F 3 | 3510 E 7 | 3511 D 6 | 3512 E 8 | 3513 E 8 | 3514 E 6 | 3515 J12 | 3516 F 6 | 3517 L12 | 3518 L11 | 3519 L14 | 3520 K13 | 3521 J14 | 3522 K14 | 3523 K12 | 3525 J 1 | 3526 J10 | 3527 L11 | 3528 L 3 | 3529 K 3 | 3530 J 4 | 3532 I 3 | 3533 J 1 | 3534 F10 | 3536 D 8 | 3537 J17 | 3538 D11 | 3539 D19 | 3540 I13 | 3541 C15 | 3542 D15 | 3543 F21 | 3544 G20 | 3545 G19 | 3546 F19 | 3548 E19 | 3549 F18 | 3550 F19 | 3551 G19 | 3552 J18 | 3553 J18 | 3554 I17 | 3555 D19 | 3556 K15 | 3557 K15 | 3558 L17 | 3559 M16 | 3560 M16 | 3561 M16 | 3562 L15 | 3563 N17 | 3564 A10 | 3565 A 9 | 3564 A 7 | 3571 L16 | 3572 N19 | 3803 H 3 | 3806 K13 | 3807 G11 | 3815 N14 | 3816 M17 | 3817 L18 | 6525 F 9 | 6526 E19 | 6526 J12 | 6527 I 3 | 6529 D12 | 6530 C14 | 6531 F20 | 6532 F20 | 6533 J18 | 6534 K17 | 6539 M17 | 6539 M15 | 6551 A 5 | 6552 A 8 | 6595 K16 | 6596 L17 | 6597 L18 | 6598 M18

SERVO

DECODER-A IC8554 — DOOS, HF, HFD

6551(A) MAB8441 MICROPROCESSOR — INT/T0, T1, RESET, Vdd, Vss, XTAL1, XTAL2, CPU, I/O PORTS

6529 TDA5709 — ROM, 3 1/2-BIT DAC, switches, RADIAL ERROR PROCESSOR, RADIAL DRIVE

6525 TDA5708 — HF AMPLIFIER, EQUALIZER, AMPLITUDE DETECTOR, GAIN CONTROL, HF AMPLITUDE SLICERS, STARTING CIRCUIT, FOCUS NORMALIZING CIRCUIT

INTEGRATING AMPLIFIER, OSCILLATOR 650Hz, FOCUS DRIVE, TURNTABLE MOTOR CONTROL

C.D.M. — FLEX PRINT (FOIL) — DIODE ASSEMBLY — D1, D2, D3, D4 — GUARD RING PHOTODIODE

LASER ASSEMBLY — 1002 LASER — MONITOR — LASER SUPPLY — LASER OUTPUT ADJ

PHOTO DIODE SIGNAL PROCESSOR

FOCUS OFFSET

TO RADIAL MOTOR VIA FLEX PRINT — RAD+, RAD-

TO FOCUS MOTOR VIA FLEX PRINT — FOC-, FOC+

TO TURNTABLE MOTOR CIRCUIT — 02-3, 02-1, 02-2, 02-4

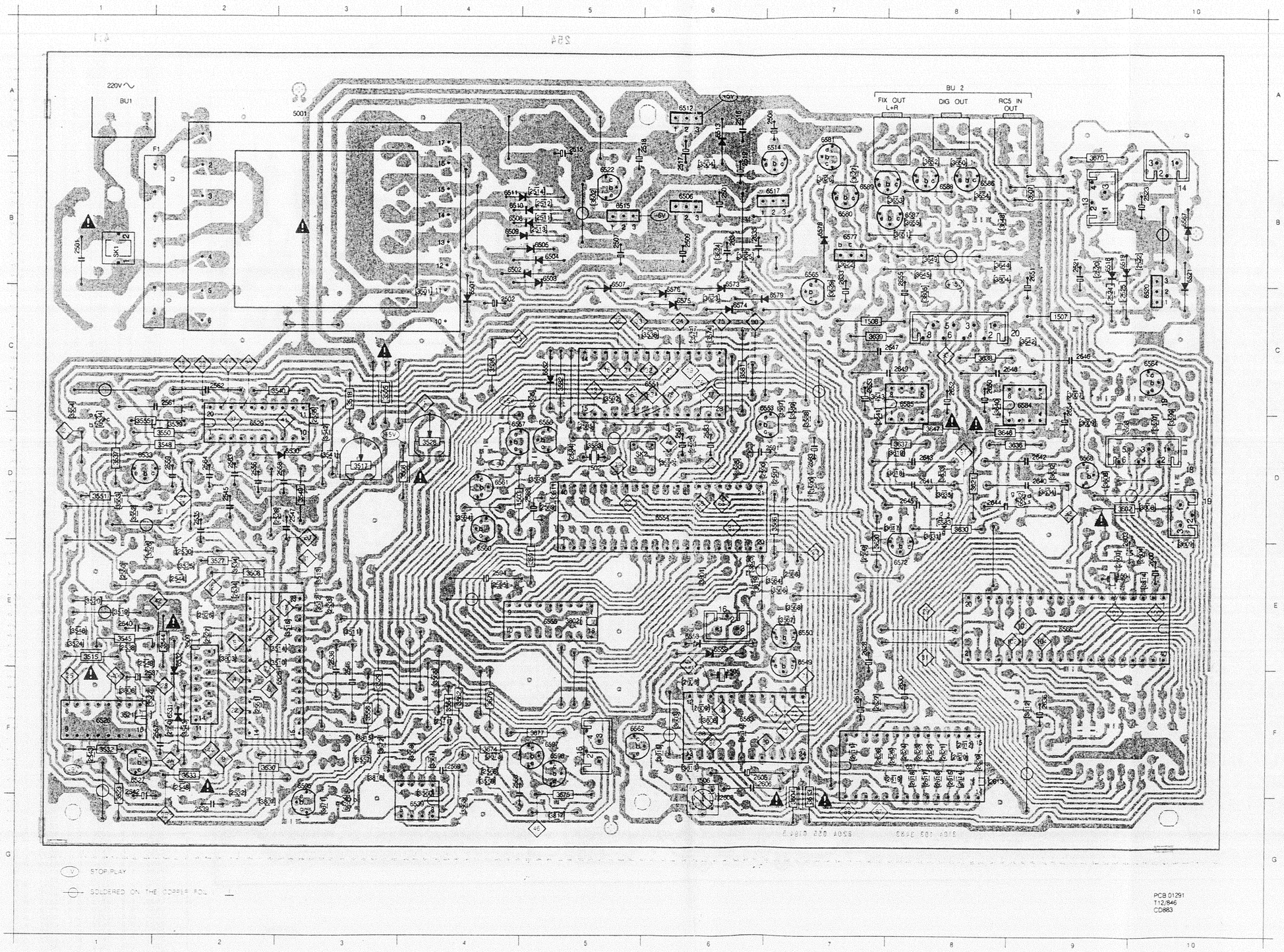
DECODER-A IC8554 — MC

SAFETY RESISTOR

CHIP JUMPER (0ee RESISTOR)

ALL CAPACITORS AND RESISTORS ARE CHIP COMPONENTS UNLESS SPACIFIED OTHERWISE

PRS 05472 T-06 844



1502	D	5	2544	D	8	3629	B	7	6587	B	8				
1503	D	4	2545	D	8	3630	D	8	6588	B	8				
1504	E	9	2546	C	9	3631	D	8	6589	B	7				
1505	F	6	2647	C	8	3632	D	9	6590	F	9				
1506	F	6	2648	C	9	3633	D	8	6595	F	3				
1507	C	9	2649	C	8	3634	D	9	6596	G	3				
1508	C	7	2650	C	8	3635	D	8	6597	F	5				
2501	B	6	2651	B	9	3636	D	9	6598	F	5				
2501	B	1	2652	C	8	3637	D	8	BU1	A	1				
2502	C	4	2653	C	7	3638	C	8	SK1	B	1				
2507	B	5	2654	C	9	3639	C	7	SK2	D	5				
2508	A	7	2655	B	8	3640	C	8							
2509	B	6	3501	C	4	3641	C	7							
2511	B	5	3502	B	5	3642	C	9							
2512	B	5	3504	B	5	3643	C	7							
2513	B	5	3505	C	3	3644	B	8							
2514	B	5	3508	E	2	3645	B	8							
2515	A	5	3508	D	4	3646	D	8							
2516	A	6	3509	E	2	3647	D	8							
2517	B	6	3510	E	3	3648	B	8							
2518	A	5	3511	E	3	3649	B	8							
2519	A	6	3512	E	3	3650	B	8							
2520	B	9	3513	E	3	3651	B	8							
2521	B	9	3514	E	3	3652	B	8							
2522	B	10	3515	E	1	3653	B	8							
2523	B	10	3516	E	3	3654	B	8							
2524	C	9	3517	D	3	3655	B	8							
2525	C	9	3518	C	3	3670	A	9							
2526	E	2	3519	E	1	3671	G	3							
2527	E	2	3520	E	1	3672	F	3							
2528	D	2	3521	F	1	3673	F	4							
2530	D	2	3522	F	1	3674	F	4							
2532	F	2	3523	F	1	3675	F	5							
2533	E	3	3524	E	1	3676	F	4							
2534	E	2	3525	E	2	3677	F	5							
2535	D	2	3526	E	1	3801	E	6							
2536	E	3	3527	E	2	3802	E	5							
2537	F	2	3528	E	2	3803	E	2							
2538	E	1	3529	F	3	3804	B	8							
2539	G	2	3530	F	2	3805	C	8							
2540	E	1	3532	F	1	3806	F	1							
2542	F	1	3533	F	2	3807	G	2							
2543	F	1	3534	E	2	3808	D	10							
2544	F	2	3536	C	4	3809	E	10							
2545	D	2	3537	D	1	3811	D	5							
2546	E	3	3538	C	6	3814	E	10							
2547	D	3	3539	D	2	3815	F	3							
2548	F	2	3540	C	3	3816	F	3							
2549	E	1	3541	D	3	3817	G	5							
2550	E	1	3542	D	3	3819	E	6							
2551	F	2	3543	F	2	3823	E	6							
2555	D	3	3544	E	2	5001	A	3							
2556	D	2	3545	E	1	6501	B	4							
2557	F	2	3546	E	1	6502	B	4							
2558	D	3	3548	D	2	6503	B	5							
2559	D	2	3549	D	3	6504	B	5							
2560	F	2	3550	D	2	6505	B	5							
2561	C	2	3551	D	1	6506	B	5							
2562	C	2	3552	D	1	6507	B	5							
2563	D	2	3553	D	1	6508	B	4							
2564	D	2	3554	C	1	6509	B	4							
2566	F	4	3555	F	3	6510	B	4							
2568	F	4	3556	F	3	6511	B	4							
2569	F	4	3557	F	3	6512	A	6							
2571	F	4	3558	F	4	6513	A	6							
2581	D	6	3559	F	4	6514	A	7							
2582	D	6	3560	F	4	6515	B	5							
2583	D	6	3561	F	4	6517	B	7							
2584	D	5	3562	F	4	6518	B	9							
2585	D	5	3563	G	4	6519	B	9							
2586	E	7	3564	F	4	6520	C	10							
2587	D	7	3565	F	4	6521	B	10							
2588	D	5	3566	E	7	6522	B	5							
2589	D	5	3567	E	7	6525	F	3							
2590	D	6	3568	C	7	6526	B	1							
2591	D	7	3574	C	6	6527	F	1							
2593	D	7	3575	C	6	6529	D	2							
2594	E	4	3581	C	6	6530	D	3							
2595	E	4	3582	C	5	6531	F	2							
2599	E	7	3583	C	5	6532	E	2							
2600	E	10	3584	E	7	6533	D	1							
2601	E	9	3585	D	6	6534	D	1							
2602	G	5	3586	D	7	6539	G	4							
2603	D	9	3587	C	7	6549	E	7							
2604	E	10	3588	D	7	6550	E	7							
2605	F	6	3589	C	7	6551	C	6							
2606	F	7	3590	D	7	6552	C	5							
2607	B	9	3591	E	5	6553	C	6							
2608	F	5	3592	C	5	6554	D	6							
2609	F	6	3593	D	5	6555	E	5							
2610	F	7	3594	D	4	6556	D	5							
2611	F	7	3595	C	5	6557	D	4							
2612	F	8	3596	D	6	6558	E	6							
2613	F	8	3597	D	10	6559	E	6							
2614	F	8	3598	D	9	6560	E	4							
2615	F	8	3599	C	10	6561	D	4							
2616	F	8	3602	D	9	6562	F	5							
2617	F	8	3603	F	6	6563	F	6							
2618	F	8	3604	F	7	6564	C	10							
2619	F	8	3606	F	6	6565	B	7							
2620	F	8	3607	C	9	6566	E	9							
2621	F	8	3608	D	9	6567	B	10							
2622	F	9	3609	D	9	6568	D	9							
2623	F	8	3612	F	9	6571	F	8							
2624	F	8	3613	F	7	6572	E	8							
2625	F	8	3614	F	6	6573	B	6							
2626	F	7	3615	F	6	6574	C	6							
2627	F	7	3616	F	6	6575	C	6							
2628	E	7	3617	D	8	6576	C	6							
2629	F	8	3618	D	8	6577	B	7							
2630	F	8	3619	D	8	6578	B	7							
2633	B	7	3620	D	7	6579	C	7							
2634	B	6	3621	D	8	6580	B	7							
2635	B	6	3622	B	7	6581	A	7							
2636	F	9	3623	C	6	6582	D	9							
2640	D	9	3624	B	6	6583	D	8							
2641	D	8	3625	B	6	6584	C	9							
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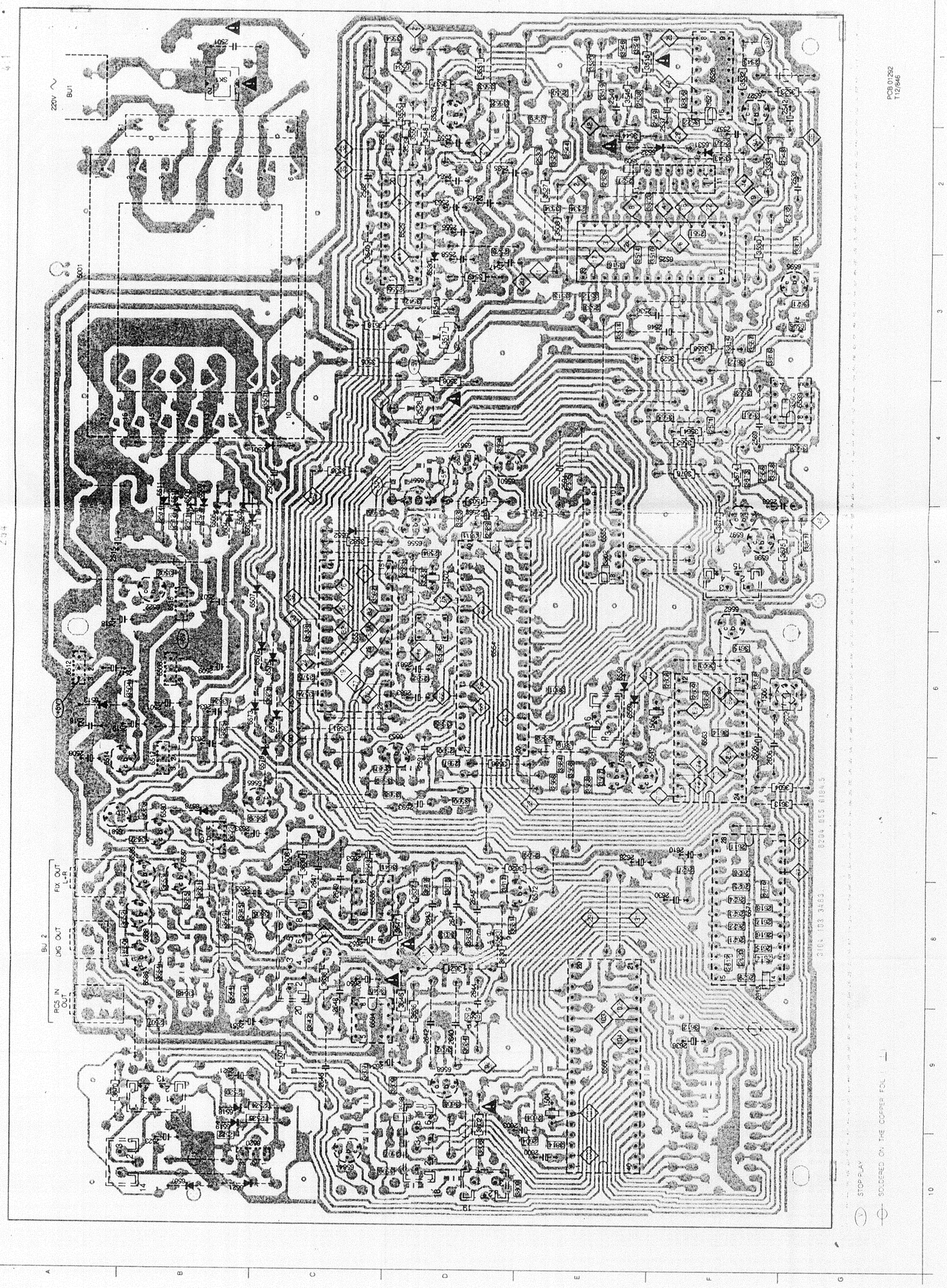

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1504 E 9 2646 C 9 3631 D 8 6589 B 7
1505 F 6 2647 C 8 3632 D 9 6590 F 9
1506 F 6 2648 C 9 3633 D 8 6595 F 3
1507 C 7 2649 C 8 3634 D 9 6596 G 3
1508 C 7 2650 C 8 3635 D 9 6597 F 5
2501 B 6 2651 B 9 3636 D 9 6598 F 5
2501 B 1 2652 C 8 3637 D 8 BU1 A 1
A 2502 C 4 2653 C 7 3638 C 8 SK1 B 1
2507 B 5 2654 C 9 3639 C 7 SK2 D 6
2508 A 5 2655 B 8 3640 C 8
2508 B 6 3501 C 4 3641 C 7
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2512 B 5 3504 B 6 3643 C 7
2513 B 5 3505 C 3 3644 B 8
2514 B 5 3508 E 2 3645 B 8
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2516 A 6 3509 E 4 3647 B 8
2517 B 6 3510 E 3 3648 B 8
2518 A 5 3511 E 3 3649 B 8
2519 A 6 3512 E 3 3650 B 8
2520 B 9 3513 E 3 3651 B 8
2521 B 9 3514 E 3 3652 B 8
2522 B10 3515 E 3 3653 B 8
2523 B10 3516 E 3 3654 B 8
2524 C 9 3517 D 3 3655 B 8
2525 C 9 3518 C 3 3670 A 9
2526 E 2 3519 E 1 3671 G 3
2527 E 2 3520 E 1 3672 F 3
2528 D 2 3521 F 1 3673 F 4
2530 E 2 3522 F 1 3674 F 4
2532 F 2 3523 F 1 3675 F 5
2533 E 3 3524 E 1 3676 F 5
2534 E 2 3525 E 2 3677 E 6
2535 E 3 3526 E 2 3801 E 2
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2538 E 1 3528 F 3 3804 B 8
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2563 C 2 3553 D 1 6508 B 4
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2583 D 6 3562 F 4 6518 B 9
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2593 D 7 3581 C 5 6530 D 2
2594 E 4 3582 C 5 6531 F 2
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2601 E 9 3586 D 7 6539 G 4
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2627 F 7 3616 F 6 6577 B 7
2628 F 7 3617 D 8 6578 B 7
G 2629 F 8 3618 D 8 6579 C 7
2630 F 8 3619 D 8 6580 C 7
2631 F 8 3620 D 7 6581 A 7
2634 B 6 3621 B 7 6582 D 9
2635 B 6 3622 B 6 6583 D 8
2636 F 9 3623 C 6 6584 C 9
2640 D 9 3624 B 6 6585 B 8
2641 D 8 3625 B 6 6586 C 8
2642 D 8 3626 B 7 6587 B 8
2643 D 8 3627 B 7 6588 B 8

DECO 1

1503 L 2 · 1505 M14 · 1506 H20 · 2586 F 2 · 2587 E 2 · 2588 N 3 · 2589 M 3 · 2590 M 4 · 2591 G 3 · 2593 J 3 · 2594 N10 · 2595 N 9 · 2599 B19 · 2602 H20 · 2605 M19 · 2606 M18 · 2607 H21 · 2608 N14 · 2609 N15 · 3566 F14 · 3567 F13 · 3568 F13 · 3574 A19 · 3575 A19 · 3584 E 2 · 3585 F 3 · 3586 G 2 · 3587 H 2 · 3588 H 2 · 3589 H 3 · 3590 I 3 · 3591 M10 · 3592 C17 · 3593 D18 · 3594 D19 · 3595 B17 · 3596 A13 · 3603 E17 · 3604 M18 · 3606 M14 · 3615 H20 · 3616 H20 · 3801 M 8 · 3802 M 8 · 6549 F12 · 6550 F13 · 6551 B 4 · 6553 H 2 · 6554 E11 · 6555 N 4 · 6556 C18 · 6557 B19 · 6558 C19 · 6559 C19 · 6560 D18 · 6561 D19 · 6562 E17 · 6563 G12 · SK 2 A13

DECODING 1

6551(B) MAB8441 MICRO-PROCESSOR

I/O PORTS

CLOCK

SK 2 TRAY DETECTION

SCLK · SDATA

TRAY M-OUT · TRAY M-IN

CD ROM SWITCH

DOOS · CRI · SWAB/SSM · QDA · QCL · QRA · MSTP

6554 SAA7210

FROM/TO SERVO CIRCUIT · HF · HFI · HFD · FB · IREF · PD/OC · CEFM

DATA SLICER · DEMOD. TIMING · EFM DECODER · SUBCODE PROCESSOR · Q CHANNEL PROCESSOR

FIFO CONTROL & RAM INTERFACE · X-TAL CLOCK

DEEM · MC · SCAB · SDAB

DECODER

PHASE & FREQUENCY DETECTOR · V.C.O.

CONTROL · ADDRESS · DATA & FLAG

C1 INTERLEAVER CORRECTOR · C2 INTERLEAVER CORRECTOR DESCRAMBLER · ADAPTIVE FLAG PROCESSOR

1 SAMPLE INTER-POLATOR & SAMPLE /HOLD & MUTE CIRCUIT

MUTE · WSAB · CLAB · DAAB · EFAB

X-TAL OSCILLATOR · X OUT · X IN

DRAM · 6555 UPD41416C-15

6563 SAA7220 · ATSB · MUSB

FILTER

CHANNEL DEMULTI-PLEXER · INPUT STAGE

8 SAMPLE INTERPOLATOR · 12 dB ATTENUATOR · SOFT MUTE CIRCUIT · 4 x UPSAMPLING DIGITAL FILTER

DIGITAL OUTPUT ENCODER · DOBM · DIGITAL OUTPUT · BU2-D

CHANNEL MULTI-PLEXER CIRCUIT · OUTPUT STAGE · DABD · CLBD · WSBD · DECODING2 CIRCUIT

DEEM · DECODING2 CIRCUIT · MC · SERVO CIRCUIT

X-TAL OSCILLATOR · TO CIRCUIT · X-IN · X-OUT · TEST

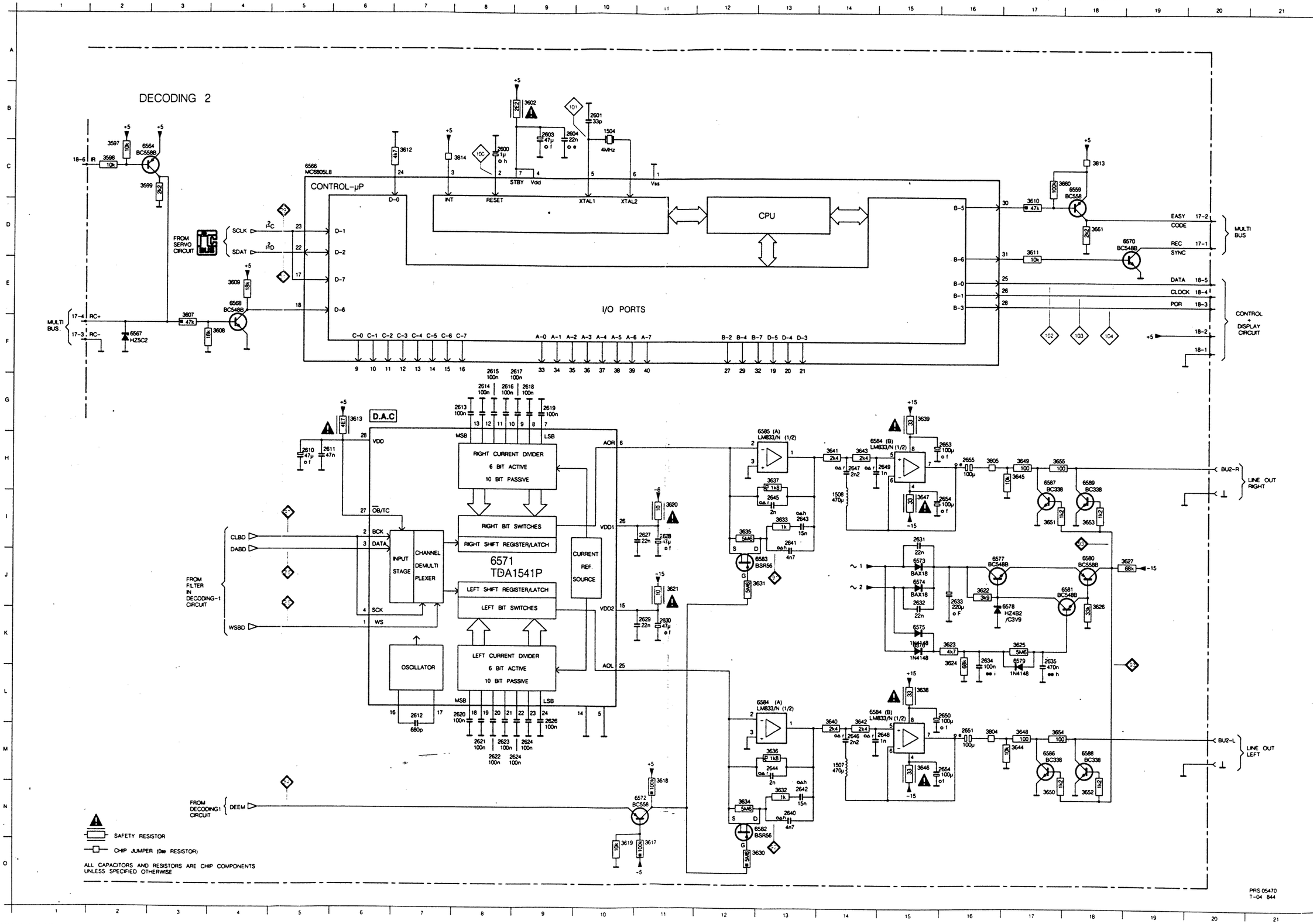
SAFETY RESISTOR · CHIP JUMPER (0Ω RESISTOR)

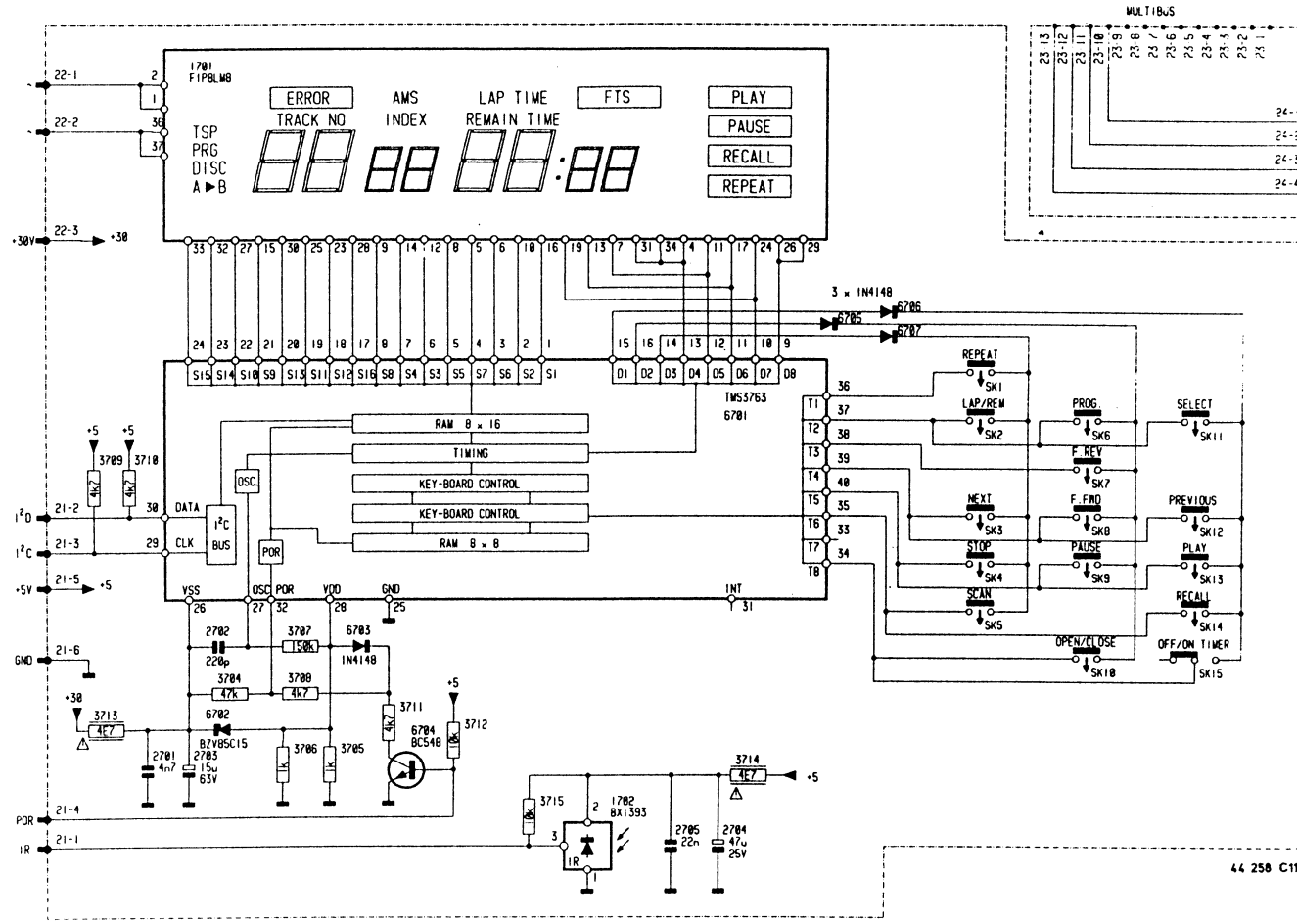
ALL CAPACITORS AND RESISTORS ARE CHIP COMPONENTS UNLESS OTHERWISE SPECIFIED

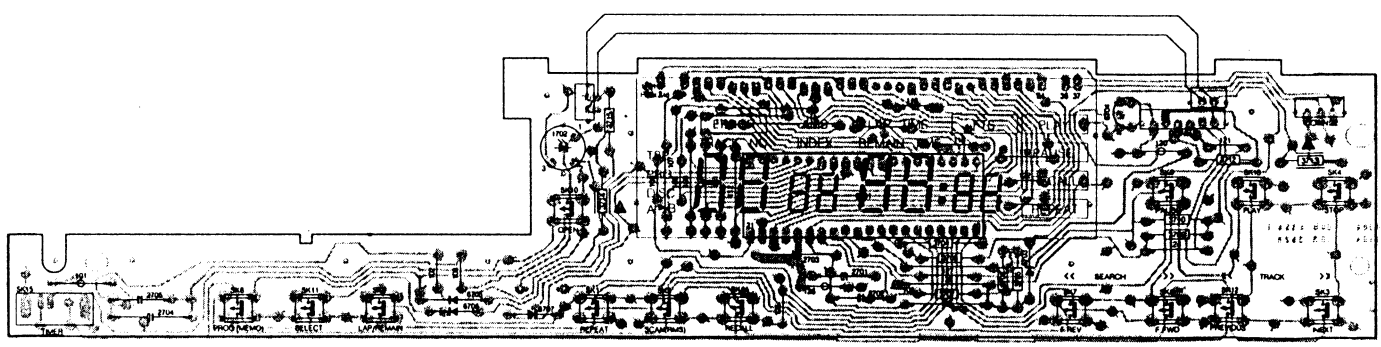
PHS 05463 T12-843

DECO 2

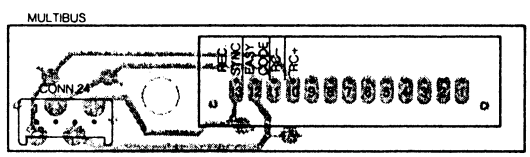
1504 B10 2603 B 9 2613 G 8 2618 G 9 2623 M 8 2628 I11 2633 J16 2642 N13 2647 H14 2653 H16 3598 C 2 3609 E 4 3617 O11 3622 J16 3627 J19 3634 N12 3639 G15 3644 M17 3649 H17 3654 M17 3805 H16 6566 C 5 6572 N11 6577 J16 6582 N13 6585 G13
1507 M14 2604 B 9 2614 G 8 2619 G 9 2624 M 9 2629 K11 2634 K16 2643 I13 2648 M15 2654 M16 3599 C 2 3610 C17 3618 M11 3623 K16 3630 O15 3635 I12 3640 L14 3645 H17 3650 N17 3655 H17 3813 C18 6567 F 2 6573 J15 6578 J17 6583 J13 6586 M17
1508 I14 2610 H 5 2615 F 8 2620 L 8 2624 M 9 2630 K11 2635 K17 2644 M13 2649 H15 2654 M16 3602 B 9 3611 D17 3619 O10 3624 K16 3631 J13 3636 M13 3640 L14 3645 H17 3650 N17 3655 H17 3813 C18 6567 F 2 6573 J15 6578 J17 6583 J13 6586 M17
2600 C 8 2611 M 6 2616 G 8 2621 M 8 2626 L 9 2631 I15 2640 N13 2645 I13 2650 L16 2655 M16 3607 E 3 3612 C 7 3620 I 11 3625 K17 3632 N13 3637 H13 3642 L14 3647 I 5 3652 N18 3661 D18 6559 C18 6570 D19 6575 K15 6580 J18 6584 L15 6588 M18
2601 B10 2612 L 7 2617 F 9 2622 M 8 2627 I11 2632 J15 2641 I13 2646 M14 2651 M16 3597 C 2 3608 F 4 3613 G 6 3621 J11 3626 J18 3633 I13 3638 L15 3643 H14 3648 M17 3653 I18 3804 M16 6564 C 2 6571 G 6 6576 K15 6581 J18 6584 L13 6589 H18







PCB 01253
T27/843



PCB 01255
T27/843

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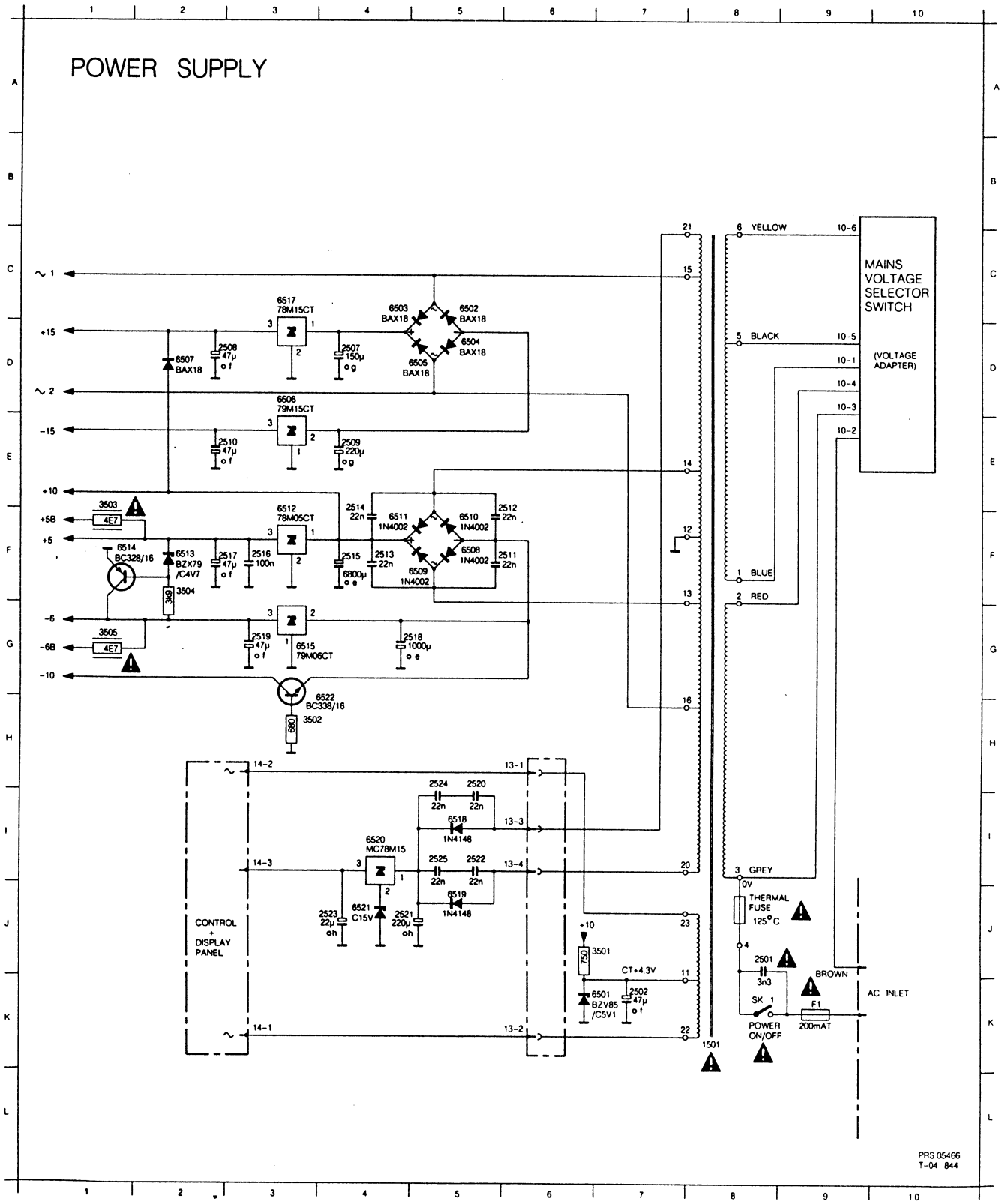
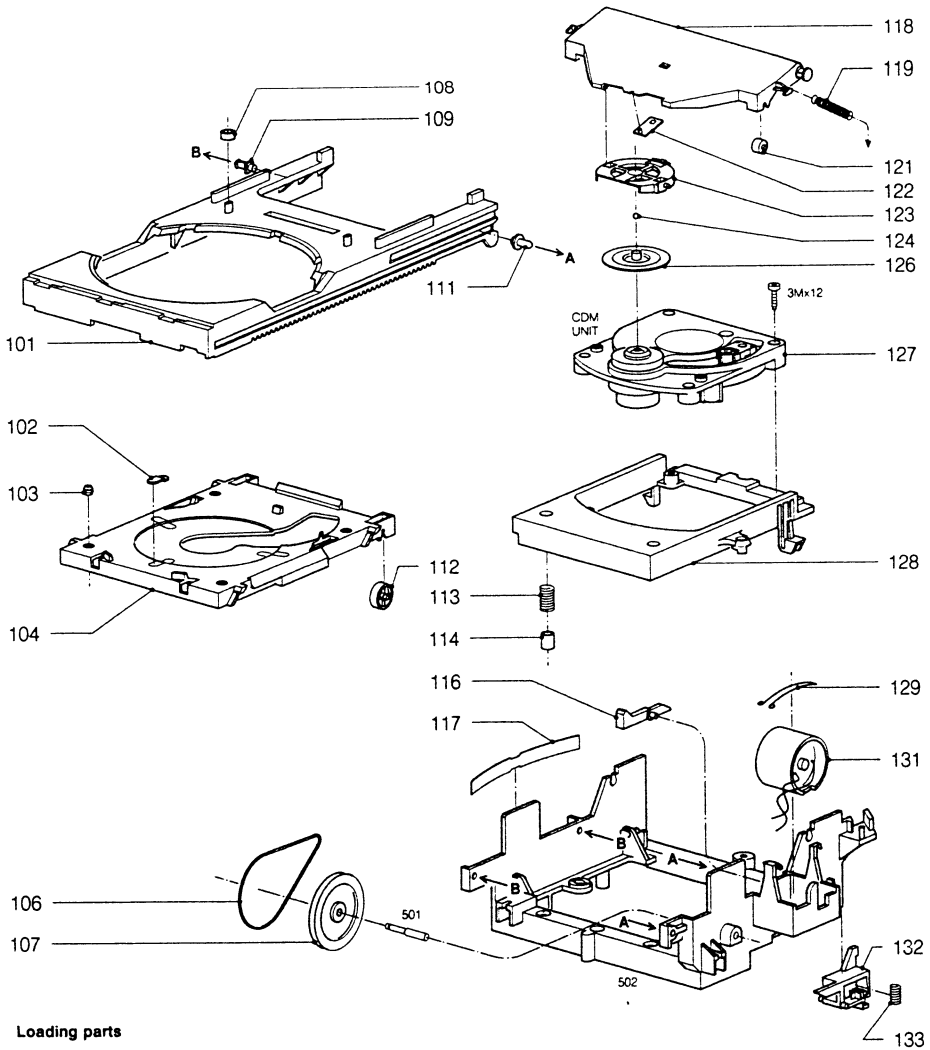




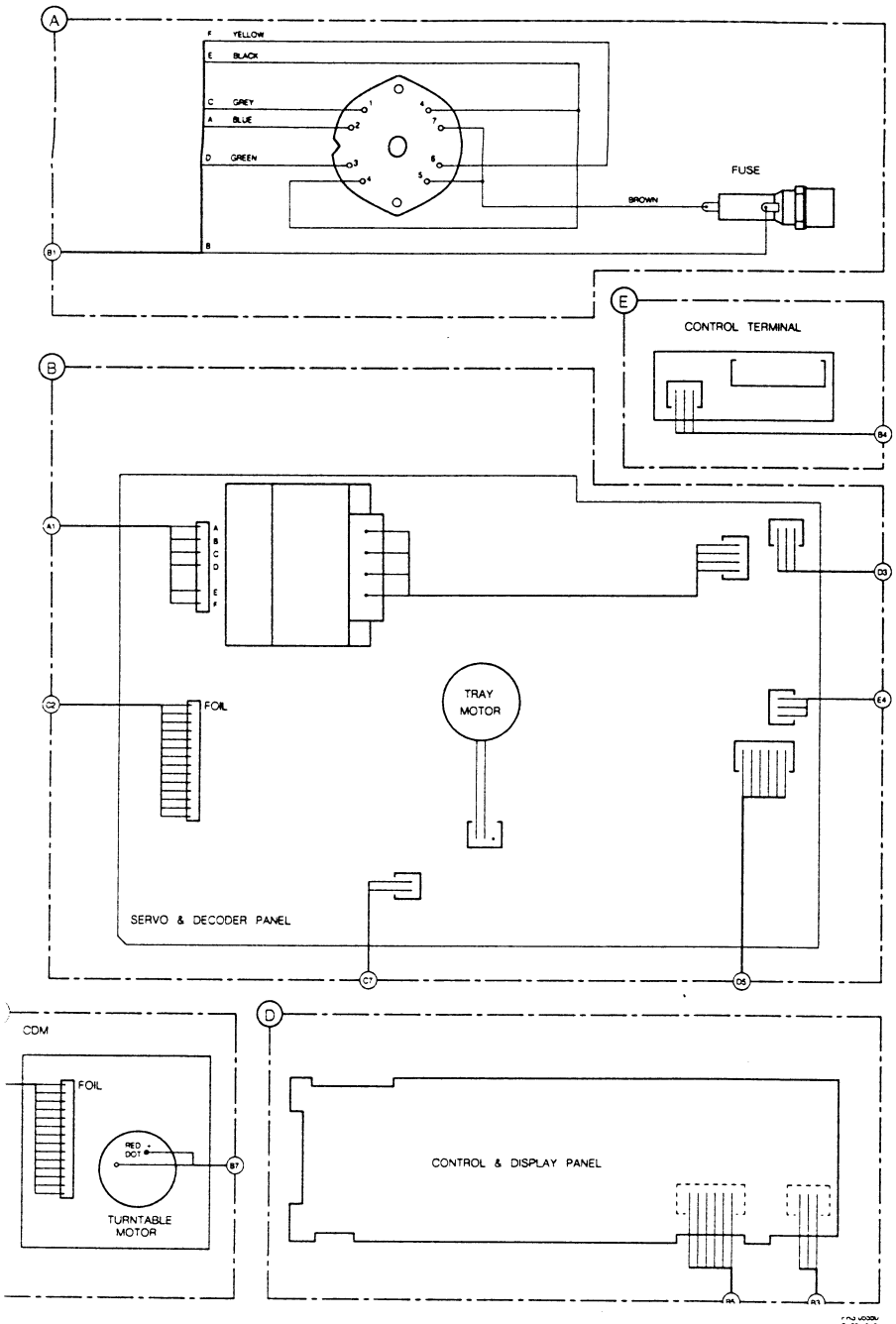
Loading parts

101	4822 444 50603	119	4822 492 32883
102	4822 325 50176	121	4822 528 90639
103	4822 325 50177	122	4822 466 92257
104	4822 466 92251	123	4822 402 61207
106	4822 358 10115	124	4822 520 40177
107	4822 522 32359	126	4822 530 80503
108	4822 532 51518	127	4822 691 30209
109	4822 402 61081	128	4822 402 61196
111	4822 402 61132	129	4822 492 63746
112	4822 528 90638	131	4822 361 20998
113	4822 492 51902	132	4822 402 50244
114	4822 466 61587	133	4822 492 51935
116	4822 402 61107	502	4822 464 50715
117	4822 492 63659		
118	4822 444 60568		

CAUTION
INVISIBLE LASER RADIATION WHEN OPEN. DO NOT STARE INTO BEAM

EVA.00594
821/T19

WIRING DIAGRAM



Electrical partslist servo + decoder panel
For non active chip components see separate list

TMS 3763 BNL	4822 209 83926
MC79M15CT	5322 209 86361
TY40408 (=MC7805)	4822 209 71579
MC7906CT	4822 209 82056
MC78M15CT	4822 209 80808
TDA5708	4822 209 83202
L272BH	4822 209 72026
TDA5709	4822 209 83203
NJM4560D	4822 209 83274
MAB8441P/T120	4822 209 11544
SAA7210P/04	4822 209 71001
µPD41416C-20	4822 209 50582
SAA7220	4822 209 11157
MC6805L8/2C86618	4822 209 11537
TDA1541	4822 209 72544
LM833	4822 209 83163

BC548B	4822 130 40937
BC328-16	4822 130 41023
BC338	4822 130 44121
BC558B	4822 130 44197
BC548B	4822 130 40937
BC328	4822 130 44104
BF450	4822 130 44237
BC818-25	4822 130 42696

BZV 85-C15	4822 130 33732
1N4148	4822 130 30621
BZV 85-C5V1	4822 130 31456
BAX 18	4822 130 34121
1N4002	5322 130 30684
HZ5B1	4822 130 32986
HZ15-3	4822 130 80138
HZ7C2	4822 130 32862
BAT85	4822 130 31983
HZ5C2	4822 130 33293
BZX55-C5V1	4822 130 80512
HZ4B2	4822 130 32843

BSR56	4822 130 42633

2µH2	4822 157 50963
HF-TRAFO (DIG)	4822 148 80281
470 µH	4822 157 51193

T 315 mA	4822 253 10074

10k	4822 116 52452
4R7 ⚠	4822 111 30499
1R ⚠	4822 111 30483
18R ⚠	4822 111 30515
12R ⚠	4822 111 30511
2R2 ⚠	4822 111 30492
10R ⚠	4822 111 30508
1k8	4822 116 53109
33R ⚠	4822 111 30522
220R	4822 116 52407
100R	4822 116 52389

22k Lin.	4822 100 11193
4k7 Lin.	4822 101 10685

47µF 25V	4822 124 22027
220pF 50V	4822 122 10172
3N3 400V ⚠	4822 122 40327
470µF	4822 157 51193
470N	4822 121 51252
5N6	4822 122 33145
220N 63V	4822 121 42245
10N	4822 122 10177
100µF 25V	4822 124 21984
2µF2	4822 124 22341
330N 63V	4822 121 43048
18N	4822 122 33096
22N 16V	4822 122 10166
1N8	4822 122 33144
100µF 16V Bipolar	4822 124 22339

Tact switch	4822 276 12465
Timer switch	4822 277 21153
Power switch ⚠	4822 276 11309

1502	CSA 6.00MG	4822 242 71508
1504	CSA 4.00MG	4822 242 70831
1505	X-TAL 11289.60 kHz	4822 242 71644

Miscellaneous

1701	Display FIP8LM8	4822 130 90457
1702	IR-receive BX-1408	4822 214 51755
	Mains inlet	4822 265 20291
	Test disc 5+5A SBC426A	4822 397 30096
	Audio signal disc SBC429	4822 397 30185
	Low pass filter	4822 395 30204

1U

Chips 50 V NP0 S1206

1 pF	5%	4822 122 32479
1,2 pF	5%	4822 122 33013
1,5 pF	5%	4822 122 31792
1,8 pF	5%	4822 122 32087
2,2 pF	5%	4822 122 32425
3,3 pF	5%	4822 122 32079
3,9 pF	5%	4822 122 32081
4,7 pF	5%	4822 122 32082
5,6 pF	5%	4822 122 32506
6,8 pF	5%	4822 122 32507
8,2 pF	5%	4822 122 32083
10 pF	5%	4822 122 31971
12 pF	5%	4822 122 32139
15 pF	5%	4822 122 32504
18 pF	5%	4822 122 31769
22 pF	10%	4822 122 31837
27 pF	5%	4822 122 31966
33 pF	5%	4822 122 31756
39 pF	5%	4822 122 31972
47 pF	5%	4822 122 31772
56 pF	5%	4822 122 31774
68 pF	5%	4822 122 31961
82 pF	10%	4822 122 31839
100 pF	5%	4822 122 31765
120 pF	5%	4822 122 31766
150 pF	5%	4822 122 31767
180 pF	2%	4822 122 31794
220 pF	5%	4822 122 31965
270 pF	5%	4822 122 32142
330 pF	10%	4822 122 31642
390 pF	5%	4822 122 31771
470 pF	5%	4822 122 31727
560 pF	5%	4822 122 31773
680 pF	5%	4822 122 31775
820 pF	5%	4822 122 31974
1 nF	10%	5322 122 31647
1,2 nF	5%	4822 122 31807
1,5 nF	10%	4822 122 31781
1,8 nF	10%	4822 122 32153
2,2 nF	10%	4822 122 31644
2,7 nF	10%	4822 122 31783
3,3 nF	10%	4822 122 31969
3,9 nF	10%	4822 122 32566
4,7 nF	10%	4822 122 31784
5,6 nF	10%	4822 122 31916
6,8 nF	10%	4822 122 31976
10 nF	10%	4822 122 31728
12 nF	10%	5322 122 31648
15 nF	10%	4822 122 31782
18 nF	10%	4822 122 31759
22 nF	10%	4822 122 31797
27 nF	10%	4822 122 32541
33 nF	10%	4822 122 31981
47 nF	10%	4822 122 32542
56 nF	10%	4822 122 32183
100 nF	10%	4822 122 31947
180 nF	10%	4822 122 32915
220 nF	20%	4822 122 32715

Chips 0,125 W S1206 NP0

0 E	jumper	4822 111 90163
1 E	5%	4822 111 90184
1,1 E	5%	4822 111 90377
1,2 E	5%	4822 111 90378
1,3 E	5%	4822 111 90379
1,5 E	5%	4822 111 90381
1,6 E	5%	4822 111 90382
1,8 E	5%	4822 111 90383
2 E	5%	4822 111 90384
2,2 E	5%	5322 111 90104
2,4 E	5%	4822 111 90385
2,7 E	5%	4822 111 90386
3 E	5%	4822 111 90387
3,3 E	5%	4822 111 90388
3,6 E	5%	4822 111 90389
3,9 E	5%	4822 111 90391
4,3 E	5%	4822 111 90392

Chips 0,125 W S1206

4,7 E	5%	5322 111 90376
5,1 E	5%	4822 111 90393
5,6 E	5%	4822 111 90394
6,2 E	5%	4822 111 90395
6,8 E	5%	4822 111 90254
7,5 E	5%	4822 111 90396
8,2 E	5%	4822 111 90397
9,1 E	5%	4822 111 90398
10 E	2%	5322 111 90095
11 E	2%	4822 111 90338
12 E	2%	4822 111 90341
13 E	2%	4822 111 90343
15 E	2%	4822 111 90344
16 E	2%	4822 111 90347
18 E	2%	5322 111 90139
20 E	2%	4822 111 90352
22 E	2%	4822 111 90186
24 E	2%	4822 111 90355
27 E	2%	5322 111 90105
30 E	2%	4822 111 90356
33 E	2%	4822 111 90357
36 E	2%	4822 111 90359
39 E	2%	4822 111 90361
43 E	2%	5322 116 90125
47 E	2%	4822 111 90217
51 E	2%	4822 111 90365
56 E	2%	4822 111 90239
62 E	2%	4822 111 90367
68 E	2%	4822 111 90203
75 E	2%	4822 111 90371
82 E	2%	4822 111 90124
91 E	2%	4822 111 90375
100 E	2%	5322 111 90091
110 E	2%	4822 111 90335
120 E	2%	4822 111 90339
130 E	2%	4822 111 90164
150 E	2%	5322 111 90098
160 E	2%	4822 111 90345
180 E	2%	5322 111 90242
200 E	2%	4822 111 90348
220 E	2%	4822 111 90178
240 E	2%	4822 111 90353
270 E	2%	4822 111 90154
300 E	2%	4822 111 90156
330 E	2%	5322 111 90106
360 E	1%	4822 111 90288
360 E	2%	4822 111 90358
390 E	2%	5322 111 90138
430 E	2%	4822 111 90362
470 E	2%	5322 111 90109
510 E	2%	4822 111 90245
560 E	2%	5322 111 90113
620 E	2%	4822 111 90366
680 E	2%	4822 111 90162
750 E	2%	5322 111 90306
820 E	2%	4822 111 90171
910 E	2%	4822 111 90372
1 k	2%	5322 111 90092
1,1 k	2%	4822 111 90336
1,2 k	2%	5322 111 90096
1,3 k	2%	4822 111 90244
1,5 k	2%	4822 111 90151
1,6 k	2%	5322 111 90265
1,8 k	2%	5322 111 90101
2 k	2%	4822 111 90165
2,2 k	2%	4822 111 90248
2,4 k	2%	4822 111 90289
2,7 k	2%	4822 111 90569
3 k	2%	4822 111 90198
3,3 k	2%	4822 111 90157
3,6 k	2%	5322 111 90107
3,9 k	2%	4822 111 90571
4,3 k	2%	4822 111 90167
4,7 k	2%	5322 111 90111
5,1 k	2%	5322 111 90268
5,6 k	2%	4822 111 90572
6,2 k	2%	4822 111 90545

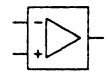
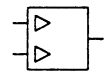
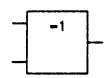
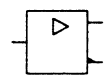
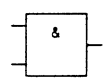
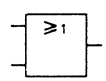
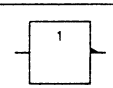
Chips 0,125 W S1206

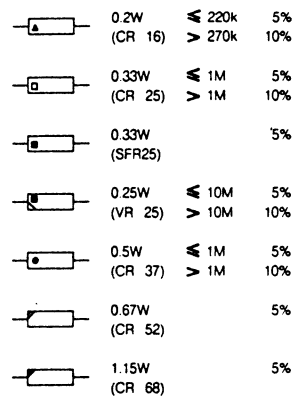
6,8 k	2%	4822 111 90544
7,5 k	2%	4822 111 90276
8,2 k	2%	5322 111 90118
9,1 k	2%	4822 111 90373
10 k	2%	4822 111 90249
11 k	2%	4822 111 90337
12 k	2%	4822 111 90253
13 k	2%	4822 111 90509
15 k	2%	4822 111 90196
16 k	2%	4822 111 90346
18 k	2%	4822 111 90238
20 k	2%	4822 111 90349
22 k	2%	4822 111 90251
24 k	2%	4822 111 90512
27 k	2%	4822 111 90542
30 k	2%	4822 111 90216
33 k	2%	5322 111 90267
36 k	2%	4822 111 90514
39 k	2%	5322 111 90108
43 k	2%	4822 111 90363
47 k	2%	4822 111 90543
51 k	2%	5322 111 90274
56 k	2%	4822 111 90573
62 k	2%	5322 111 90275
68 k	2%	4822 111 90202
75 k	2%	4822 111 90574
82 k	2%	4822 111 90575
91 k	2%	5322 111 90277
100 k	2%	4822 111 90214
110 k	2%	5322 111 90269
120 k	2%	4822 111 90568
130 k	2%	4822 111 90511
150 k	2%	5322 111 90099
160 k	2%	5322 111 90264
180 k	2%	4822 111 90565
200 k	2%	4822 111 90351
220 k	2%	4822 111 90197
240 k	2%	4822 111 90215
270 k	2%	4822 111 90302
300 k	2%	5322 111 90266
330 k	2%	4822 111 90513
360 k	2%	4822 111 90515
390 k	2%	4822 111 90182
430 k	2%	4822 111 90168
470 k	2%	4822 111 90161
510 k	2%	4822 111 90364
560 k	2%	4822 111 90169
620 k	2%	4822 111 90213
680 k	2%	4822 111 90368
750 k	2%	4822 111 90369
820 k	2%	4822 111 90205
910 k	2%	4822 111 90374
1 M	2%	4822 111 90252
1,1 M	5%	4822 111 90408
1,2 M	5%	4822 111 90409
1,3 M	5%	4822 111 90411
1,5 M	5%	4822 111 90412
1,6 M	5%	4822 111 90413
1,8 M	5%	4822 111 90414
2 M	5%	4822 111 90415
2,2 M	5%	4822 111 90185
2,4 M	5%	4822 111 90416
2,7 M	5%	4822 111 90417
3 M	5%	4822 111 90418
3,3 M	5%	4822 111 90191
3,6 M	5%	4822 111 90419
3,9 M	5%	4822 111 90421
4,3 M	5%	4822 111 90422
4,7 M	5%	4822 111 90423
5,1 M	5%	4822 111 90424
5,6 M	5%	4822 111 90425
6,2 M	5%	4822 111 90426
6,8 M	5%	4822 111 90235
7,5 M	5%	4822 111 90427
8,2 M	5%	4822 111 90237
9,1 M	5%	4822 111 90428
10M	5%	5322 111 91141

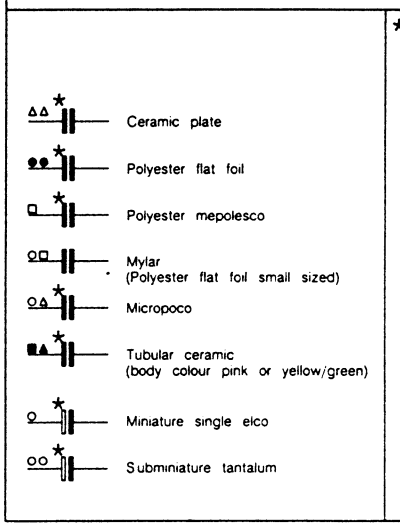
SYMBOL	DESCRIPTION
	Capacitor, general
	Electrolytic capacitor (+ and − may be omitted)
	Bipolar electrolytic capacitor (+ may be omitted)
	Resistor, general
	N.T.C. resistor
	P.T.C. resistor
	Voltage divider with preset adjustment
	Chip jumper
	Pin contact
	Bus contact
	Coil, self-induction
	Transformer with electrically poor conducting core and adjustable pre-magnetization
	Diode
	Zener diode
	Stabistor
	Double variable capacity diode (in one envelope)
	Photo conductive diode
	L.E.D.

SYMBOL	DESCRIPTION
	Transistor (N.P.N.)
	Transistor (P.N.P.)
	Direct current (DC)
	Alternating current (AC)
	Earth (functional)
	Frame or chassis connection
	Direction in which AC voltages are passed on (optional present)
	Interrupted line
	Not-connected crossing lines
	Connected lines
	Cable tree with lead-outs
	Changer, general (arrow is optional)
	Voltage Controlled Oscillator
	Band-pass filter
	Phase changing network
	Delay element
	Amplifier, general

MDA.00083
T32-735

SYMBOL	DESCRIPTION
	Operational amplifier
	Differential amplifier
	Splitter
	Operational amplifier with open output
	Exclusive OR gate
	True/complement amplifier with high input
	Flip Flop
	AND gate
	OR gate
	Inverter with high input





MDA 00084
T32-735